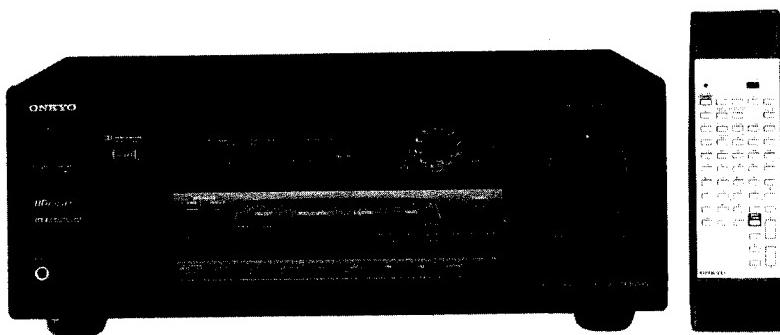


# ONKYO® SERVICE MANUAL

## AUDIO VIDEO CONTROL RECEIVER MODEL TX-SV545



**Black and Silver models**

BMD	120V AC,60Hz
BMP,BMPT,BMPA,SMP	230V AC,50Hz
BMWWT	220-230V/120V AC,50/60Hz
BMGK	220V AC,50Hz

### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  $\Delta$  ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

### TABLE OF CONTENTS

Specifications.....	2
Service procedures.....	3
Adjustment procedures.....	4
Tuner section.....	4
Amplifier section.....	38
Microprocessor connection diagram.....	6
Microprocessor terminal descriptions.....	7
IC block diagrams and descriptions.....	8
Printed circuit board parts list.....	15
Volume section.....	25
Tuner section.....	42
Video section.....	50
Block diagrams.....	19
Amp. section.....	19
Tuner section.....	51
Printed circuit board view.....	21
Main circuit section.....	21
Volume section.....	26
Display and switch sections.....	29
Power supply and amp. sections.....	33
Power amplifier section.....	37
Tuner section.....	41
Video section.....	49
Schematic diagrams.....	23
Main circuit section.....	23
Volume section.....	27
Display and switch sections.....	31
Power supply and amp. sections.....	35
Power amplifier section.....	39
Tuner section.....	43
Video section.....	49
Exploded view.....	45
Parts list.....	47
Packing view.....	52

**ONKYO®  
AUDIO COMPONENTS**

## SPECIFICATIONS

### AMPLIFIER SECTION

#### Power Output

U.S. & Canadian models:

#### **Stereo mode**

Front L/R channels:

**75 watts per channel, min. RMS at 8 ohms, both channels driven from 20 Hz to 20 kHz with no more than 0.08% total harmonic distortion.**

#### **Surround mode**

Front L/R and Center channels:

**65 watts per channel, min. RMS at 8 ohms, three channels driven from 20 Hz to 20 kHz with no more than 0.08% total harmonic distortion.**

Surround L/R channels:

(Rear only driven)

**25 watts per channel, min. RMS at 8 ohms, both channels driven from 20 Hz to 20 kHz with no more than 0.3% total harmonic distortion.**

#### **Remote mode**

25 watts per channel, min. RMS at 8 ohms, both channels driven from 20 Hz to 20 kHz with no more than 0.08% total harmonic distortion.

Other area models:

#### **Stereo mode**

Front L/R channels:

**2 × 100 watts at 6 ohms, 1 kHz (DIN)**

#### **Surround mode**

Front L/R and Center channels:

**3 × 95 watts at 6 ohms, 1 kHz (DIN)**

Surround L/R channels:

(Rear only driven)

**2 × 35 watts at 6 ohms, 1 kHz (DIN)**

#### **Remote mode**

**2 × 30 watts at 6 ohms, 1 kHz (DIN)**

#### IM Distortion:

0.08% at rated power (Front)

#### Damping Factor:

60 at 8 ohms (Front)

#### Input Sensitivity/Impedance

PHONO:

2.5 mV/50 kohms

CD/TAPE 1, 2/VIDEO-1, 2, 3:

200 mV/50 kohms

#### MULTI CHANNEL INPUT

(FRONT L/R, SURROUND L/R, CENTER):

200 mV/50 kohms

#### MULTICHANNEL INPUT (SUBWOOFER):

36 mV/50 kohms

#### Output Level/Impedance

REC OUT:

200 mV/2.2 kohms

PRE OUT:

1 V/ 470 ohms

#### Phono Overload:

120 mV RMS at 1 kHz, 0.5% T.H.D.

#### Frequency Response:

20 Hz to 30 kHz, ±1 dB (Surround OFF)

#### RIAA Deviation:

20 Hz to 20 kHz, ±0.8 dB

#### Tone Control

Bass:

±10 dB at 50 Hz

Treble:

±10 dB at 10 kHz

#### Signal-to-Noise Ratio (Surround OFF)

Phono:

80 dB (IHF A, 5 mV input)

CD/Tape:

100 dB (IHF A)

Muting:

—∞ dB

### VIDEO SECTION

#### Input Sensitivity and Impedance

Video (Composite):

1 Vp-p/75 ohms

#### Output Level and Impedance

Video (Composite):

1 Vp-p/75 ohms

### TUNER SECTION

#### FM

Tuning Range: 87.5 — 108.0 MHz (50 kHz steps)

#### Usable Sensitivity

Mono: 11.2 dBf, 1.0 μV (75 ohms)

Stereo: 17.2 dBf, 2.0 μV (75 ohms)

#### 50 dB Quieting Sensitivity

Mono: 17.2 dBf, 2.0 μV (75 ohms)

Stereo: 37.2 dBf, 20 μV (75 ohms)

#### Capture Ratio:

Image Rejection Ratio

U.S. & Canadian models: 40 dB

Other area models: 85 dB

#### IF Rejection Ratio:

90 dB

#### Signal-to-Noise Ratio

Mono: 76 dB

Stereo: 70 dB

#### Alternate Channel Attenuation:

55 dB

#### Selectivity:

50 dB (DJN)

#### AM Suppression Ratio:

50 dB

#### Total Harmonic Distortion

Mono: 0.1%

Stereo: 0.2%

#### Frequency Response:

30 Hz — 15 kHz, ±1.0 dB

#### Stereo Separation:

45 dB at 1 kHz

#### Muting level:

30 dB at 70 Hz — 10 kHz

#### 17.2 dBf

#### AM

#### Tuning Range

U.S. & Canadian models: 530—1,710 kHz (10 kHz steps)

European & Australian models: 522—1,611 kHz (9 kHz steps)

Worldwide models: 531—1,602 kHz (9 kHz steps), 530—1,710 kHz (10 kHz steps)

#### Usable Sensitivity:

30 μV

#### Image Rejection Ratio:

40 dB

#### IF Rejection Ratio:

40 dB

#### Signal-to-Noise Ratio:

40 dB

#### Total Harmonic Distortion:

0.7%

### GENERAL

#### Power Supply

AC 120 V, 60 Hz

AC 220 V, 60 Hz

AC 230 V, 50 Hz

AC 220-230 V and 120 V switchable, 50/60 Hz

#### Power Consumption

U.S. & Canadian models: 3.5 A

Other area models: 310 W

#### Dimensions (W × H × D):

435 × 175 × 390 mm

17-1/8" × 6-7/8" × 15-3/8"

#### Weight:

U.S. & Canadian models: 11.7 kg, 25.8 lbs.

Other area models: 12.5 kg, 27.6 lbs.

### REMOTE CONTROL

#### U.S. & Canadian models:

RC-343M

RC-344S

Infrared

#### Signal range:

Approx. 5 meters, 16 ft.

#### Power supply:

Two "AA" batteries (1.5 V × 2)

Specifications and features are subject to change without notice.

## SERVICE PROCEDURES

### 1. Replacing the fuses

 This symbol located near the fuse indicates that the fuse used is fast operating type. For continued protection against fire hazard, replace with same type fuse. For fuse rating refer to the marking adjacent to the symbol.

 Ce symbole indique que le fusible utilise est a rapide. Pour une protection permanente, n'utiliser que des fusibles de même type. Ce dernier est indiqué la qu le présent symbol est apposé.

CIRCUIT NO.	PART NO.	DESCRIPTION
F901	252198	8A-UL, Primary fuse <D/W>
F902	252077	4A-SE-EAK, Primary fuse <P/T/W/A/K>
F903	252075	2.5A-SE-EAK, Fuse <P>
	252074	2A-SE-EAK, Fuse <T/A>
F915,F916	252166	6.3A-UL/T-237, Secondary fuse <D>
	252079	6.3A-SE-EAK, Secondary fuse <P/T/W/A/K>

NOTE: <D>: 120V model only  
 <P>: European model only  
 <T>: Asian model only  
 <W>: Worldwide model only  
 <A>: Australian model only  
 <K>: Korean model only

### 2. To Initialize the unit

This device employs a microprocessor to perform various functions and operations. If interference generated by an external power supply, radio wave, or other electrical source results in accident which causes the specified operations and functions to operate abnormally.

To perform a result, please follow the procedure below.

1. Press and hold down the CD button, then press the POWER button.
2. After "clear" is displayed, the preset memory and each mode stored in the memory, such as surround, are initialized and will return to the factory settings.

### 3. Safety-check out

(Only U.S.A. model)

After correcting the original service problem, perform the following safety check before releasing the set to the customer. Connect the insulating-resistance tester between the plug of power supply cord and the screw on the back panel.

Specifications:  $3.3 \text{ Mohm} \pm 10\% \text{ at } 500\text{V}$ .

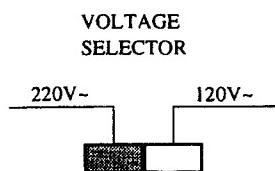
### 4. Change of voltage

Worldwide models are equipment with a voltage selector to conform with local power supplies. This switch is located on the back panel.

Be sure to set this switch to match the voltage of the power supply in your area before turning the power switch on.

This switch is set to 220V at the factory. Voltage is changed by sliding the groove in the switch with the screwdriver to the right

or left. Confirm that the switch has been moved all the way to the right or left before turning the power switch on.



### 5. Memory preservation

This unit does not require memory preservation batteries.

A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged.

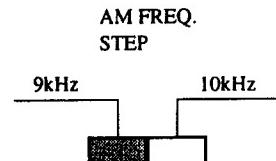
The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory, the power switch must be turned on and off a few times each month to keep the back-up system operative.

The period of the time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shorted when the unit is exposed to very high humidity or used in an area with an extremely humid climate.

### 6. Setting the tuning step frequency

Worldwide models are equipped with a step band selector switch. This switch is located on the back panel. This switch is set to 9 kHz at the factory, but may have to be reset to 10 kHz depending on the area where the unit is used.

AM band step  
 Europe: 9 kHz  
 U.S.A.: 10 kHz



### 7. Changing the band step

With the exception of the worldwide models, a tuning step selector switch is not provided. When you change the band step, change the parts as shown below.

	To 10 kHz	To 9 kHz
R745	No connection	2.7 kohm
R746	10 kohm	1.5 kohm

## ADJUSTMENT PROCEDURES

### FM

Item	Step	Connection of instrument	FM SG output	Stereo modulator output	Tuning frequency	Output indicator	Adjustment point	Adjust for	Remarks
FM IF/RF	1	Fig.1	99.0MHz 1kHz 75kHz devi. 65dBf(60dB)	—	99.0MHz	DC voltmeter	L101	$0 \pm 20\text{mV}$	FM MUTE/MODE switch:ON/STEREO Repeat the steps 1 and 3 until no further adjustment is necessary.
	2					AC voltmeter	IFT on the front end	Maximum	
	3					Distortion analyzer	L102	Minimum	
Stereo Distortion		Fig.2	99.0MHz Ext. mod. 65dBf(60dB)	Channel L or R 1kHz	99.0MHz	Distortion analyzer	IFT on the front end	Minimum	Don't turn more than $\pm 180^\circ$
Stereo Separation	1	Fig.2	99.0MHz Ext. mod. 65dBf(60dB)	Channel L 1kHz	99.0MHz	Channel R AC voltmeter	R150	Minimum	Maximum and same separation
	2			Channel R 1kHz		Channel L AC voltmeter		Minimum	
Muting Level		Fig.3	99.0MHz 19.2dBf(14dB)	—	99.0MHz	TUNED indicator	R158	Light on	

### AM

120V model

Step	AM SG output	Tuning Frequency	Output Indicator	Adjustment point	Adjust for
1		530kHz	Digital DC voltmeter	OSC coil on RF block L105	$1.4 \pm 0.2\text{V}$
2	600kHz 400Hz 30% mod. 60dB/m	600kHz	AC voltmeter	RF coil on RF block L105	Maximum
3	990kHz 400Hz 30% mod. 60dB/m	990kHz	AC voltmeter	L106	Maximum

## Reference Specification

FM tuned voltage: 87.50MHz ~ 108.00MHz

More than 1.3V ~ Less than 9V

AM tuned voltage: 530kHz ~ 1710kHz

 $1.4 \pm 0.4 \sim$  Less than 9.0V

230V and Worldwide models

Step	AM SG output	Tuning Frequency	Output Indicator	Adjustment point	Adjust for
1		522kHz or 531kHz	Digital DC voltmeter	OSC coil on RF block L105	$1.4 \pm 0.2\text{V}$
2	603kHz 400Hz 30% mod. 60dB/m	603kHz	AC voltmeter	RF coil on RF block L105	Maximum
3	999kHz 400Hz 30% mod. 60dB/m	999kHz	AC voltmeter	L106	Maximum

## Reference Specification

FM tuned voltage: 87.50MHz ~ 108.00MHz

More than 1.3V ~ Less than 9V

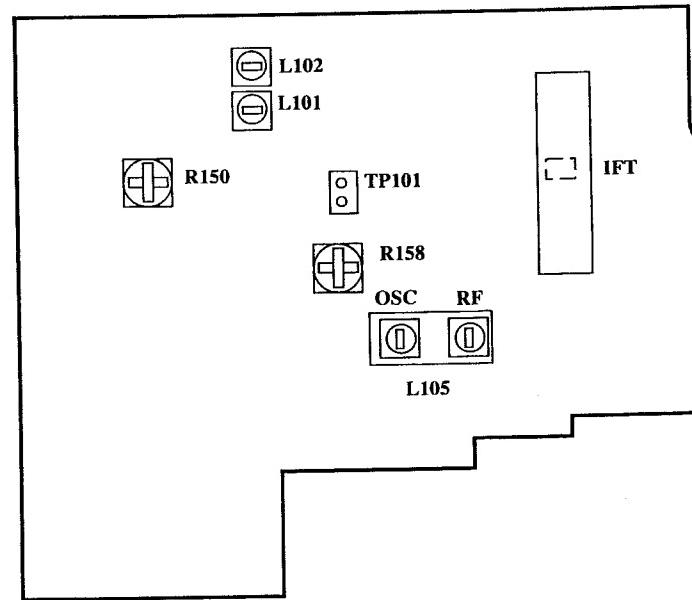
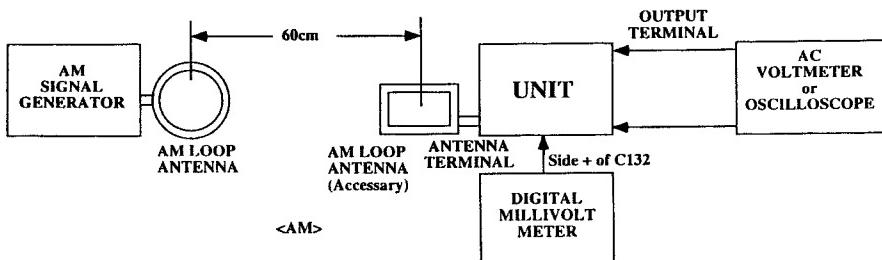
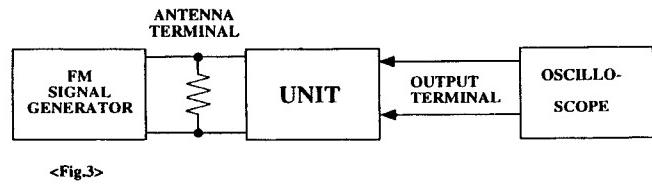
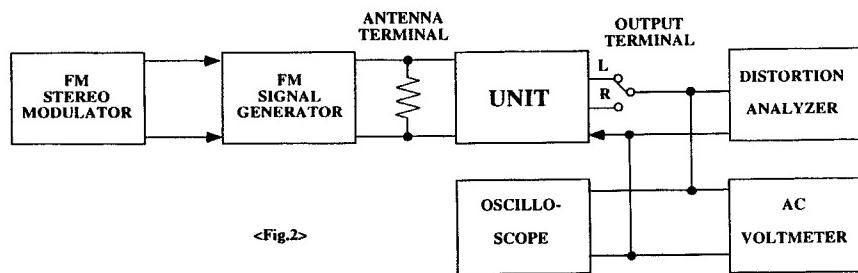
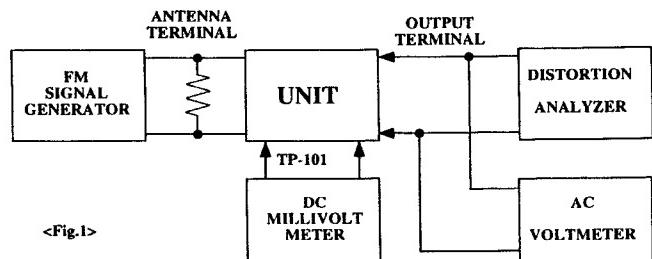
AM tuned voltage: 522kHz ~ 1611kHz

 $1.4 \pm 0.4 \sim$  Less than 9.0V  
(230V model)

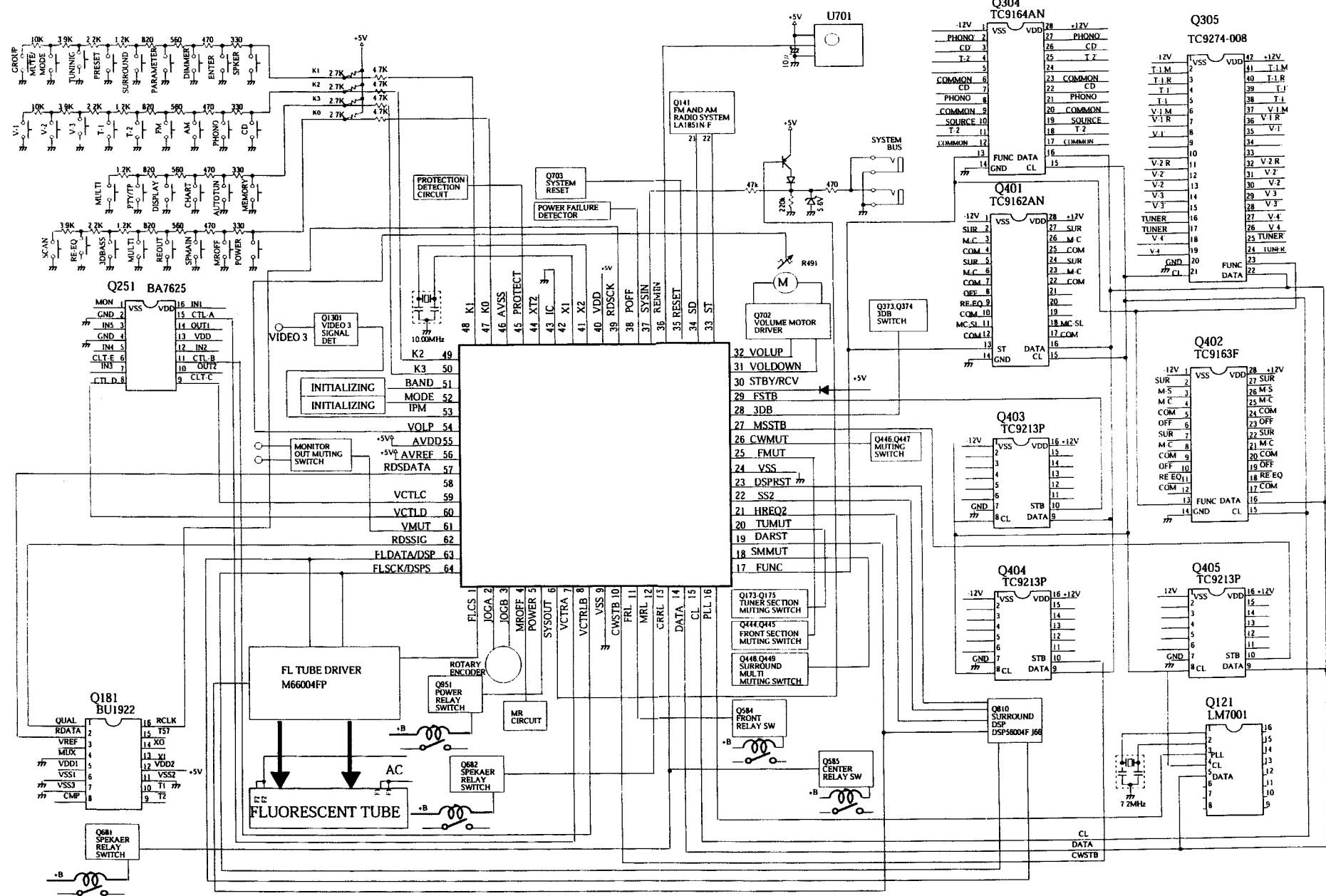
AM tuned voltage: 531kHz ~ 1602kHz

 $1.4 \pm 0.4 \sim$  Less than 9.0V

(Worldwide model)



# MICROPROCESSOR CONNECTION DIAGRAM



## MICROPROCESSOR TERMINAL DESCRIPTIONS

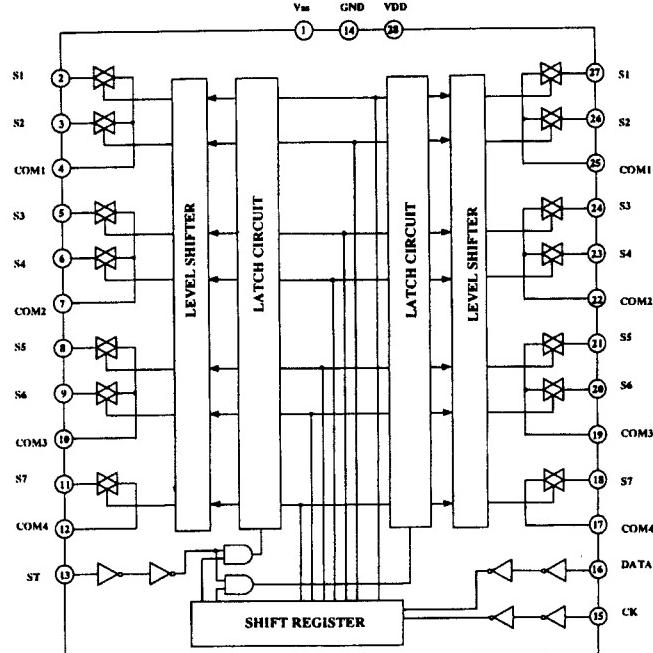
- 7 -

Pin No.	Symbol	Description
1	FLCS	Connect to the terminal CS of FL tube driver.
2	JOGA	Input pin of Jog A
3	JOGB	Input pin of Jog B
4	MROFF	Multi-Room control output pin
5	POWER	Power source control output pin
6	SYSOUT	System code output pin
7	VCTLA	Video output control pin
8	VCTLB	Video output control pin
9	VSS	Ground pin
10	CWSTB	Connect to the terminal STAB of electro volume IC
11	FRL	Front speaker relay control output pin
12	MRL	Multi speaker relay control output pin
13	CRRL	Center and surround speaker relay control output pin
14	DATA	Data output pin to Function switch, PLL and electro volume Ics.
15	CL	Clock output pin to Function switch, PLL and electro volume Ics.
16	PLL	Chip enable output pin to PLL IC.
17	FUNC	Strobe output pin to Function switch Ics
18	MSMUT	Muting output pin for surround multi amplifier.
19	DARST	Reset output pin for D/A converter
20	TUMUT	Muting output pin for tuner circuit
21	HREQ	Request input pin from terminal HREQ of DSP IC.
22	SS	Output pin to connect the terminal SS of DSP IC.
23	DSPRST	Output pin to connect the terminal RESET of DSP IC.
24	VSS	Ground pin
25	FMUT	Muting output pin for amplifier of front channels
26	CWMUT	Muting output pin for amplifier of center and sub woofer channels
27	MSSTB	Strobe output pin to Electro volume
28	3DB	3-D BASS control output pin
29	FSTB	Strobe output pin to Electro volume
30	STBY/RECV	STAND-BY and RECEIVED indicator output pin
31	VOLDOWN	Volume control output pin
32	VOLUP	Operation VOLUP VOLDOWN
		STOP H H
		UP H L
		DOWN L H
33	STEREO	Stereo broadcast detection input pin

Pin No.	Symbol	Description
34	SD	Broadcast detection input pin
35	RESET	System reset input pin
36	REMIN	Input pin from remote control
37	SYSIN	System code input pin
38	POFF	Power failure detection input pin
39	RDSSCK	Clock input pin from RDS decoder
40	VDD	Power supply pin (+5V)
41	X2	Ceramic oscillator connection pins of main system clock
42	X1	Connect the 10MHz ceramic oscillator.
43	IC	Internal connection pin
44	XT2	Not used.
45	PROTECT	Protect circuit detection input pin
46	AVSS	Ground pin of A/D converter
47	K0	Operation key connection pins
48	K1	
49	K2	
50	K3	
51	BAND	Initializing input pin for band and RDS function
52	MODE	Initializing input pin for operation mode
53	IPM	Detection input pin of Intelligent Power Management operation
54	VOLP	Position detection input pin of master volume
55	AVDD	Analog power supply pin of A/D converter
56	AVREF	Reference voltage input pin of A/D converter
57	RDSDATA	Data input pin from RDS decoder
58	NC	Not connected
59	VCTL	Video output control pin
60	VCTL	Video output control pin
61	VMUT	Muting output pin of video
62	RDSSIG	RDS broadcast detection input pin
63	DSPSO	Input pin from terminal MOSI of DSP IC
	FLDATA	Data output pin from terminal SDATA of FL tube
64	DSPSCK	Clock input pin from terminal SCLK of DSP IC
	FLSCK	Clock output pin to connect to terminal SCK of FL tube driver

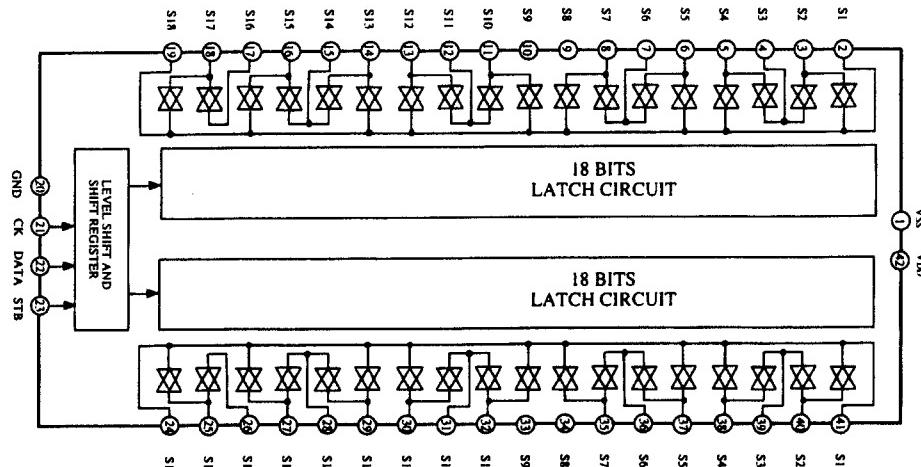
## IC BLOCK DIAGRAMS AND DESCRIPTIONS

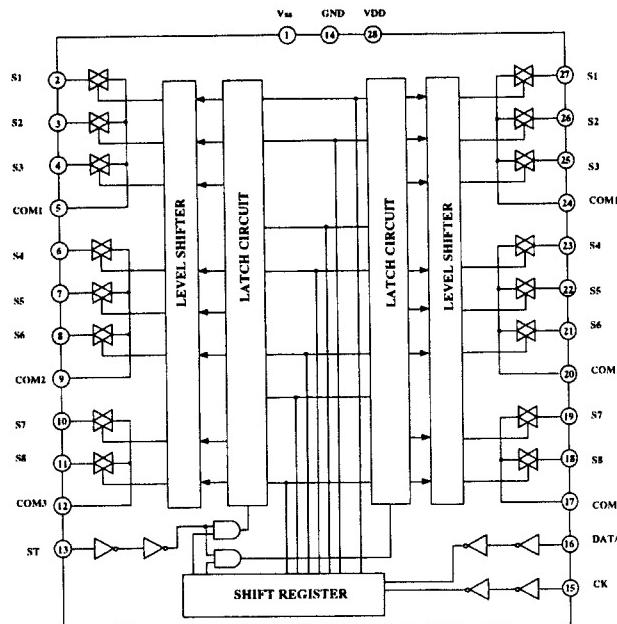
### TC9162AN (Analog Switch)



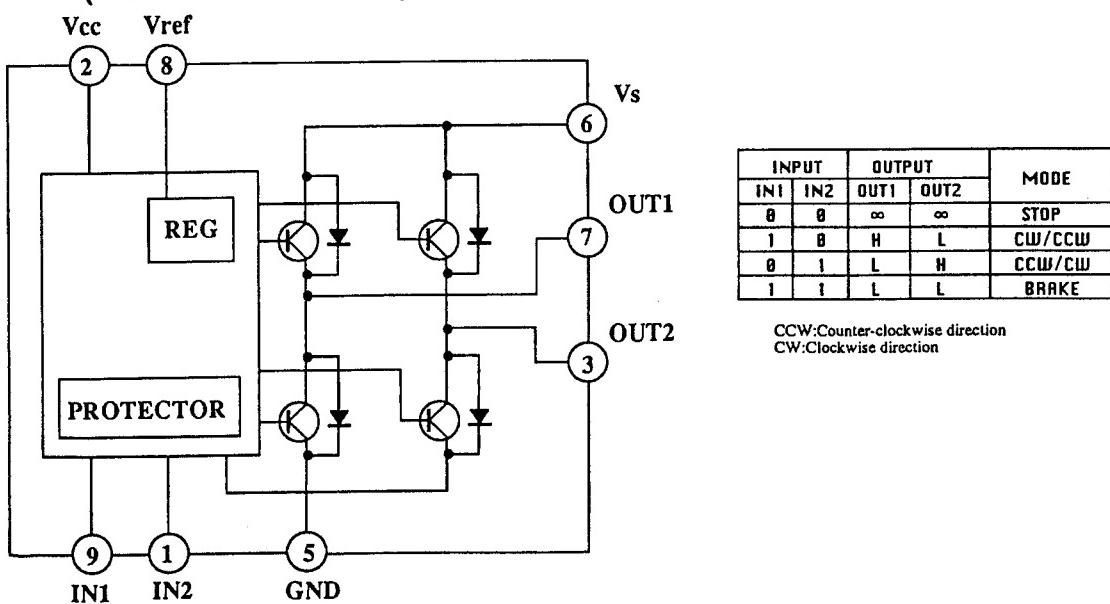
Pin No.	Symbol	Function
1	Vss	Power supply pin (-)
14	GND	Ground pin
28	VDD	Power supply pin (+)
2,3,5,6,8,9,11	S1 ~ S7	Switch input/output pins
27,26,24,23,21,20,18	S1 ~ S7	Switch input/output pins
4,7,10,12	COM1 ~ COM4	Common pins
25,22,19,17	COM1 ~ COM4	Common pins
13	ST	Strobe input pin for data interruption
15	CK	Clock input for data transfer
16	DATA	Serial data input pin for switch setting

### TC9274N-008 (Analog Switch)

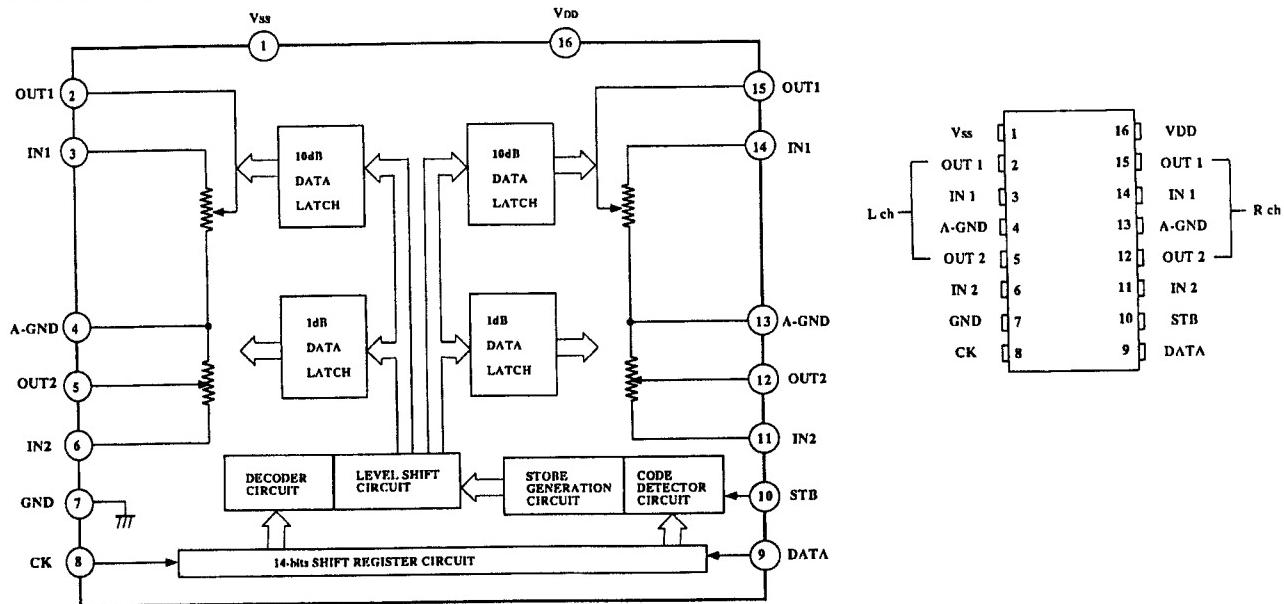


**TC9163AN (Analog Switch)**

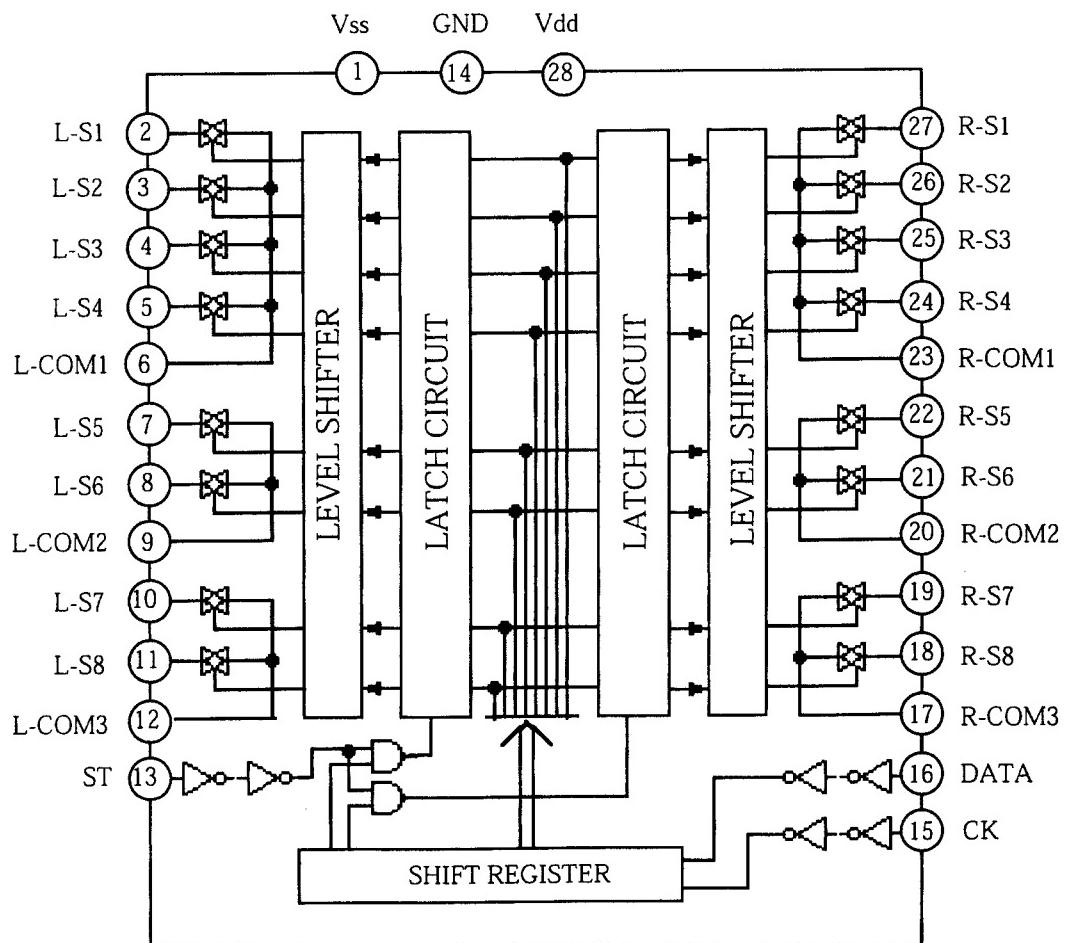
Pin No.	Symbol	Function
1	V <sub>SS</sub>	Power supply pin (-)
14	GND	Ground pin
28	V <sub>DD</sub>	Power supply pin (+)
2,3,4,6,7,8,10,11	S1~S8	Switch input/output pins
27,26,25,24,22,21,19,18	S1~S8	Switch input/output pins
5,9,12	COM1~COM3	Common pins
24,20,17	COM1~COM3	Common pins
13	ST	Strobe input pin for data interruption
15	CK	Clock input for data transfer
16	DATA	Serial data input pin for switch setting

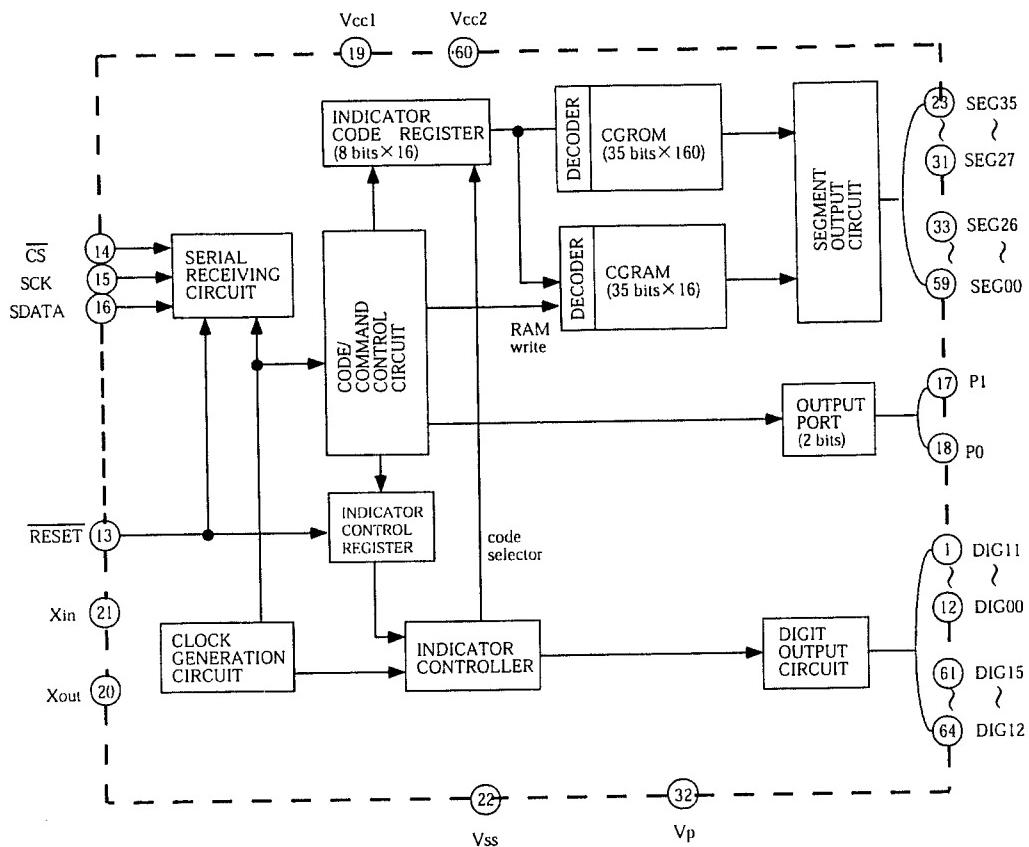
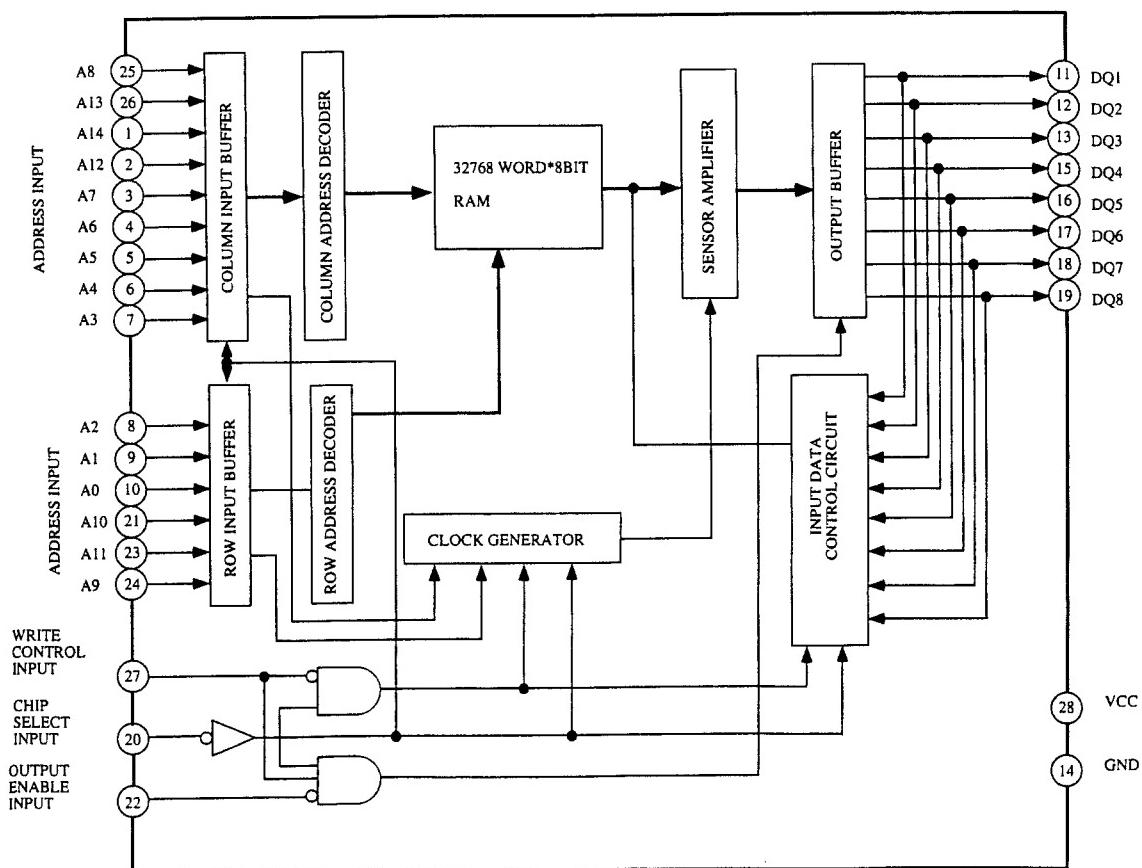
**TA7291 (Volume Motor Driver)**

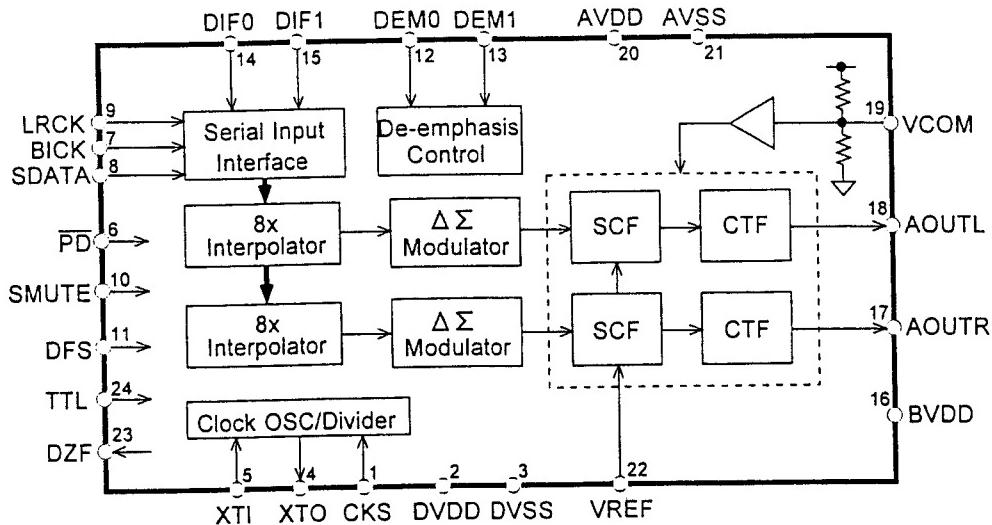
## TC9213P (Electro Volume)



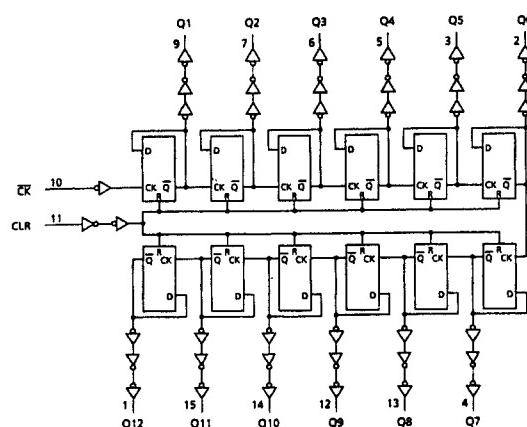
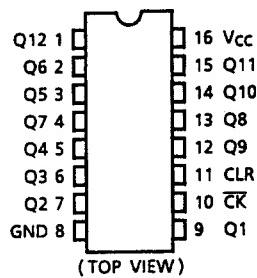
## TC9164AN (Analog Switch)

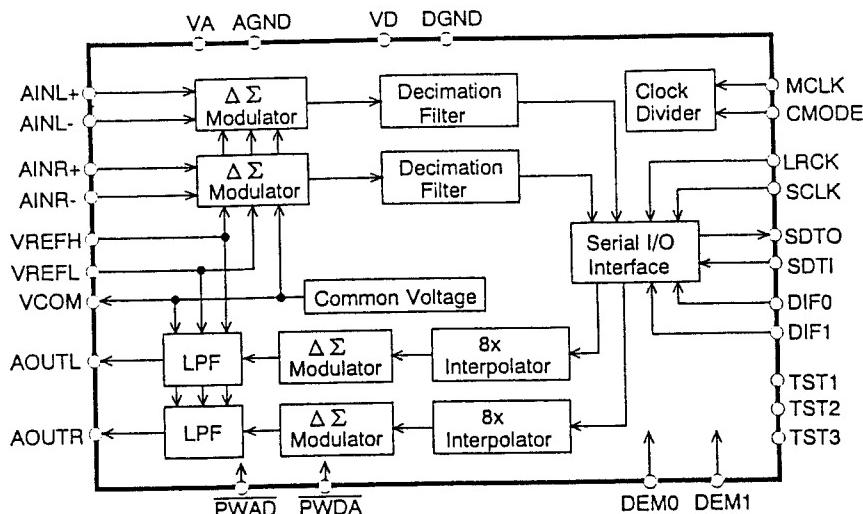


**M6604FP (FL Tube Driver)****M5M5256FP-L(RAM)**

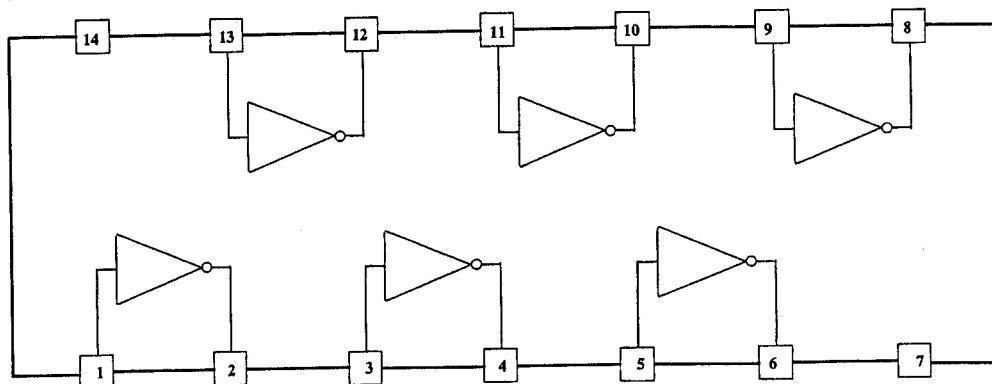
**AK4321-VS(D/A Converter)**

Pin No.	Symbol	I/O	Function
1	C K S	I	Clock Select Pin
2	D V D D	-	Digital Power Supply Pin
3	D V S S	-	Digital Ground Pin
4	X T O		Crystal Oscillator Output Pin
5	X T I	O	Crystal Oscillator Input Pin
6	P D	I	Power-Down Pin
7	B I C K	I	Serial Bit Clock Pin
8	S D A T A	I	Serial Data Input Pin
9	L R C K	I	L/R Clock Pin
10	S M U T E	I	Soft Muting Pin
11	D F S	I	Double Speed Sampling Mode Pin
12	D E M 0	I	De-emphasis Mode Pins
13	D E M 1	I	
14	D I F 0	I	Input Format Pins
15	D I F 1	I	
16	B V D D	I	Power Supply Pin
17	A O U T R	O	R ch. Analog Output Pin
18	A O U T L	O	L ch. Analog Output Pin
19	V C O M	O	Common Voltage Pin
20	A V D D	-	Analog Power Supply Pin
21	A V S S	-	Analog Ground Pin
22	V R E F	I	Reference Voltage Input Pin
23	D Z F	O	Zero-cross Input Detect Pin
24	T T L	I	I/F Level Select Pin

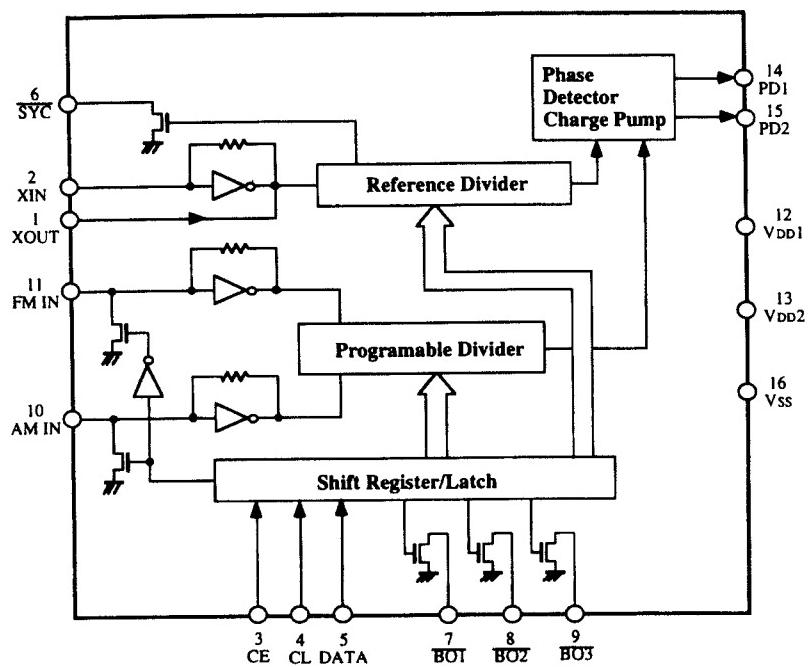
**TC74HC4040(12-Stage Binary Counter)**

**AK4520A-VS(A/D and D/A Converter)**

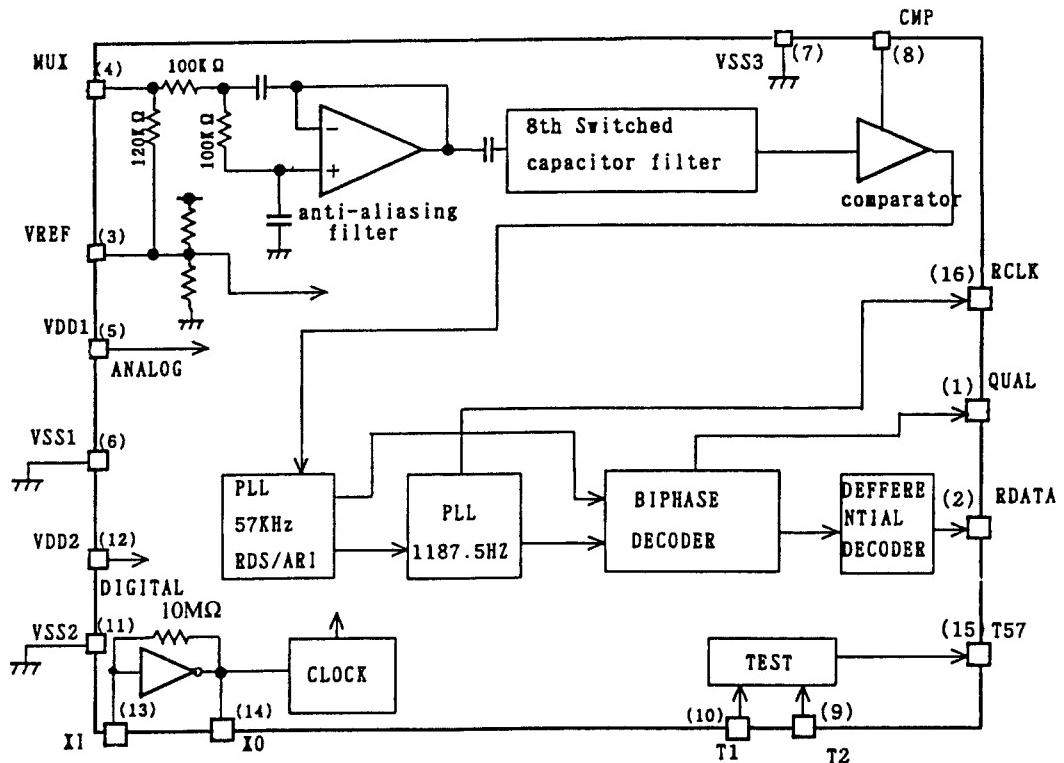
No.	Symbol	I/O	Function
1	VREFH	I	Positive Voltage Reference Input Pin, V A
2	VREFL	I	Negative Voltage Reference Input Pin, A G N D
3	A IN R +	I	Rch Analog Positive Input pin
4	A IN R -	I	Rch Analog Negative Input pin
5	A IN L +	I	Lch Analog Positive Input pin
6	A IN L -	I	Lch Analog Negative Input pin
7	V A	-	Analog Power Supply Pin
8	AGND	-	Analog Ground Pin
9	DIF0	I	Audio Data Interface Format Pin
10	DIF1	I	Audio Data Interface Format Pin
11	LRCK	I	Input/Output Channel Clock Pin
12	SCLK	I	Audio Serial Data Clock Pin
13	SDTI	I	Audio Serial Data Input Pin
14	SDTO	O	Audio Serial Data Output Pin
15	MCLK	I	Master Clock Input Pin
16	DEMO	I	De-emphasis Frequency Select Pin
17	DEM1	I	De-emphasis Frequency Select Pin
18	TST3	I/O	Test Pins (Pull down pins)
19	TST2	I/O	
20	TST1	I	
21	VD	-	Digital Power Supply Pin
22	DGND	-	Digital Ground Pin
23	PWDA	I	DAC Power-Down Mode Pin
24	PWAD	I	ADC Power-Down Mode Pin
25	CMODE	I	Master Clock Select Pin "H":384fs, "L":256fs
26	AOUTL	O	Lch Analog Output Pin
27	AOUTR	O	Rch Analog Output Pin
28	VCOM	O	Common Voltage Output Pin, V A/2

**74HC04(Hex Inverter)**

## LM7001 (PLL Synthesizer and Controller)



## BU1922(RDS Decoder)



# PRINTED CIRCUIT BOARD-PARTS LIST

MAIN CIRCUIT PC BOARD(NAAR-6095-1A/1B/1C/1D)			CIRCUIT NO.	PART NO.	DESCRIPTION
CIRCUIT NO.	PART NO.	DESCRIPTION			
<b>ICs</b>					
Q1301,Q1371	22240293 or	NJM4558L-D or	C305,C306	354721019	100 $\mu$ F,6.3V,Elect.
Q303	22240247	BA15218N	C307,C308	374726824	6800pF $\pm$ 5%,50V,Plastic
Q301	22240191	NJM4565D-D	C309,C310	374721824	1800pF $\pm$ 5%,50V,Plastic
Q304	22240800	TC9164AN	C311,C312	354741009	10 $\mu$ F,16V,Elect.
Q305	22240829	TC9274N-008	C341,C342	354741009	10 $\mu$ F,16V,Elect.
Q371,Q372	22240293 or	NJM4558L-D or	C363,C364	354742209	22 $\mu$ F,16V,Elect.
	22240247	BA15218N	C373,C374	354741009	10 $\mu$ F,16V,Elect.
Q701	22241121	$\mu$ PD78016FGC-	C379-C382	374721044	0.1 $\mu$ F $\pm$ 5%,50V,Plastic
Q702	22240239	TA7291S	C383,C384	374721534	0.015 $\mu$ F $\pm$ 5%,50V,Plastic
Q922	222780565JRC	78M56(NJM78M56FA)	C385,C386	354741009	10 $\mu$ F,16V,Elect.
Q923	222780125	78M12HF	C702	375524744	0.47 $\mu$ F $\pm$ 5%,50V,Plastic
Q924	222790125	79M12HF	C703	3000076 or	EECS5R5T104 or
Q925	222780075	78M07HF		3000078	DX-5R5L104
Q926	222790075	79M07HF	C704,C705	354721019	100 $\mu$ F,6.3V,Elect.
			C706	354741009	10 $\mu$ F,16V,Elect.
			C707	354780109	1 $\mu$ F,50V,Elect.
<b>Transistors</b>					
Q1372	2211945	2SK246-GR	C708	354721019	100 $\mu$ F,6.3V,Elect.
Q1391	2213510 or	DTA114ES or	C921,C922	3504310 or	4700 $\mu$ F,35V,Elect. or
	2214350	RN2202		3504314	4700 $\mu$ F,35V,Elect.
Q1392	2212600	DTA124ES	C926	354754719	470 $\mu$ F,25V,Elect.
Q1393	2213816 or	2SD1450-T or	C928	354741009	10 $\mu$ F,16V,Elect.
	2212356	2SD1302-T	C931	354782219	220 $\mu$ F,50V,Elect.
Q373,Q374	2211945	2SK246-GR	C932	354762219	220 $\mu$ F,35V,Elect.
Q703	221282 or	DTC144ES or	C933	354754729S	4700 $\mu$ F,25V,Elect.
	2213560	RN1204	C934,C949	354751029S	1000 $\mu$ F,25V,Elect.
Q704	2213510 or	DTA114ES or	C937,C938	354741009	10 $\mu$ F,16V,Elect.
	2214350	RN2202	C941,C942	354741009	10 $\mu$ F,16V,Elect.
Q927	2211255	2SC1815-GR			<b>Resistors</b>
Q928	2213640 or	DTC123JS or	R923,R929	443522204	22 $\Omega$ $\pm$ 5%,1/2W, Metal oxide
	2214660	RN1205	R924	443523314	330 $\Omega$ $\pm$ 5%,1/2W, Metal oxide
Q929	2211455	2SA1015-GR	R925,R931	443621204	12 $\Omega$ $\pm$ 5%,1W, Metal oxide
			R932	443524704	47 $\Omega$ $\pm$ 5%,1/2W, Metal oxide
<b>Diodes</b>					
D1301,D1302	223163 or	1SS133 or	R933,R936	453630684	6.8 $\Omega$ $\pm$ 5%,1W, Metal
D1371	223205	1SS270A	R934	443526804	68 $\Omega$ $\pm$ 5%,1/2W, Metal oxide
D371,D372	223163 or	1SS133 or	R935	453530104	1 $\Omega$ $\pm$ 5%,1/2W, Metal
D701-D704	223205	1SS270A			<b>Sockets</b>
D705	224470562	MTZJ5.6B	JL602a	25051090	NSCT-6P877
D706	224470623	MTZJ6.2C	JL691a	25051107	NSCT-3P894
D707,D708	223163 or	1SS133 or	JL701a	25051847,	NSCT-40P1634,
D926-D929	223205	1SS270A		25050980 or	NSCT-40P767 or
D921	22380022F, 22380271F or 22380285F	RBV402, D3SBA20 or RS403M	JL922a JL971a,JL972a	25051306 25051112 25051090	NSCT-40P1095 NSCT-8P899 NSCT-6P877
D922-D925	22380260,	RL1N4003,			<b>Terminals</b>
D930-D933	22380032 or 22380035	1SR139-100 or GP104003E	P301-P303	25045458 or 25045300	NPJ-6PDBL279 or NPJ-6PDBL159
D934	224473604	MTZJ36D	P304	25045460 or 25045303	NPJ-4PDBL281 or NPJ-4PDBL162
L701	233454K220	NCH-1452 220K			<b>Plugs</b>
			P102a	25055652	NPLG-14P608 <D/T/W/A/K>
<b>Oscillator</b>					
X701	3010239	CST10.0MTW		25055653	NPLG-16P609 <P>
			P245a	25055133	NPLG-3P117
<b>Capacitors</b>					
C1301-C1304	354741009	10 $\mu$ F,16V,Elect.	JL391b	25055628	NPLG-7P590
C1306	374721034	0.01 $\mu$ F $\pm$ 5%,50V,Plastic	P401a	25055704	NPLG-8P660
C1307,C1372	354741009	10 $\mu$ F,16V,Elect.	P402a,P401A	25055808	NPLG-19P764
C1375,C1376	374721044	0.1 $\mu$ F $\pm$ 5%,50V,Plastic			
C303,C304	354741009	10 $\mu$ F,16V,Elect.			

**CAUTION:** Replacement of the transistor of mark \*, if necessary, must be made from the same beta group (HFE) as the original type.

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
		<b>Heatsinks</b>			<b>Diodes</b>
Q925a	27160227	RAD-076	D961	22380070,	D5SBA60,
Q922a	27160209	RAD-67		22380038 or	RBV602 or
		<b>Screws</b>		22380274	RS603M, Diode
Q922b,Q925b	838430107	3TTP+10S(BC)	D962,D963	22380260,	RL1N4003,
				22380032 or	1SR139-100 or
				22380035	GP104003E
<b>HEADPHONE TERMINAL PC BOARD</b>					
(NAETC-6104-1A/1B/1C)					
CIRCUIT NO.	PART NO.	DESCRIPTION	L1501	231176S	S-1.3C <P/W/T/A/K>
JL571a	25051107	NSCT-3P894,Socket	L501,L502	231176S	S-1.3C <P/W/T/A/K>
P571	25045255	YKB26-5009,Headphone terminal			<b>Capacitors</b>
<b>FRONT/CENTER POWER AMP. PC BOARD</b>					
(NAAF-6108-1A/1B/1C/1D/1E/1F)					
CIRCUIT NO.	PART NO.	DESCRIPTION	C1501	354742209	22 $\mu$ F,16V,Elect.
		<b>Transistors</b>	C1504	354742219	220 $\mu$ F,16V,Elect.
Q1501-Q1503	2211733 or	2SC1845-E or	C1505	354744709	47 $\mu$ F,16V,Elect.
Q1515	2211732	2SC1845-F	C1509,C1511	354781009	10 $\mu$ F,50V,Elect.
Q1504	2213284 or	2SC1740S-R or	C1512	374721044	0.1 $\mu$ F $\pm$ 5%,50V,Plastic
	2212115	2SC2458-GR	C1515,C1516	354772209S	22 $\mu$ F,63V,Elect.
Q1505,Q1506	2211354 or	2SA949-Y or	C501,C502	354742209	22 $\mu$ F,16V,Elect.
Q1508	2211353	2SA949-O	C507,C508	354742219	220 $\mu$ F,16V,Elect.
Q1507,Q1509	2211634 or	2SC2229-Y	C509,C510	354744709	47 $\mu$ F,16V,Elect.
	2211633	2SC2229-O	C517,C518	354781009	10 $\mu$ F,50V,Elect.
Q1511	2203010	2SC5171	C521,C522	354781009	10 $\mu$ F,50V,Elect.
Q1512	2203000	2SA1930	C523,C524	374721044	0.1 $\mu$ F $\pm$ 5%,50V,Plastic
Q1513	2201653,	* 2SC3856-O,	C529,C530	354772209S	22 $\mu$ F,63V,Elect.
Q525,Q526	2201655,	* 2SC3856-P,	C541,C542	374721034	0.01 $\mu$ F $\pm$ 5%,50V,Plastic <P/T/W/A/K>
	2201654,	* 2SC3856-Y,	C582	354742219	220 $\mu$ F,16V,Elect.
	2202842 or	* 2SC5242-R or	C962,C963	374731044	0.1 $\mu$ F $\pm$ 5%,50V,Plastic
	2202843	* 2SC5242-O	C964,C965	3504309 or	12000 $\mu$ F,63V or
Q1514	2201663,	* 2SA1492-O,		3504313	12000 $\mu$ F,63V,Elect.
Q527,Q528	2201665,	* 2SA1492-P,	C966,C967	354774719S	470 $\mu$ F,63V,Elect.
	2201664,	* 2SA1492-Y,			<b>Resistors</b>
	2202832 or	* 2SA1962-R or	R1512	443526804	$\triangle$ 68 $\Omega$ $\pm$ 5%,1/2W, Metal oxide
	2202833	* 2SA1962-O	R1513,R1514	443525604	$\triangle$ 56 $\Omega$ $\pm$ 5%,1/2W, Metal oxide
Q1516	2212654 or	2SC3421-Y or	R1515,R1516	443526804	$\triangle$ 68 $\Omega$ $\pm$ 5%,1/2W, Metal oxide
Q531,Q532	2212653	2SC3421-O	R1519	5210288	N06HR2.2KBE,Trimming
Q501-Q506	2211733 or	2SC1845-E or	R1522	443521514	150 $\Omega$ $\pm$ 5%,1/2W, Metal oxide
Q529,Q530	2211732	2SC1845-F	R1523,R1524	453530224	2.2 $\Omega$ $\pm$ 5%,1/2W, Metal
Q507,Q508	2213284 or	2SC1740S-R or	R1525	4000132	RGC55 0.22,Thermistor
	2212115	2SC2458-GR	R1528	453630824	8.2 $\Omega$ $\pm$ 5%,1W, Metal
Q509-Q512	2211354 or	2SA949-Y	R523,R524	443526804	$\triangle$ 68 $\Omega$ $\pm$ 5%,1/2W, Metal oxide
Q515,Q516	2211353	2SA949-O	R525-R528	443525604	$\triangle$ 56 $\Omega$ $\pm$ 5%,1/2W, Metal oxide
Q513,Q514	2211634 or	2SC2229-Y	R529-R532	443526804	$\triangle$ 68 $\Omega$ $\pm$ 5%,1/2W, Metal oxide
Q517,Q518	2211633	2SC2229-O	R537,R538	5210288	N06HR2.2KBE,Trimming
Q521,Q522	2203010	2SC5171	R543,R544	443521514	150 $\Omega$ $\pm$ 5%,1/2W, Metal oxide
Q523,Q524	2203000	2SA1930	R545-R548	453530224	2.2 $\Omega$ $\pm$ 5%,1/2W, Metal
Q581	2211793 or	2SA992-E	R549,R550	4000132	RGC55 0.22,Thermistor
	2211792	2SA992-F	R555,R556	453630824	8.2 $\Omega$ $\pm$ 5%,1W, Metal
Q582,Q583	2213284 or	2SC1740S-R or	R571,R572	443623914	390 $\Omega$ $\pm$ 5%,1W, Metal oxide
	2212115	2SC2458-GR	R962,R963	453530224	$\triangle$ 2.2 $\Omega$ $\pm$ 5%,1/2W, Metal
Q584,Q585	2213650	DTD113ZS			<b>Sockets</b>
		<b>Diodes</b>	JL501a,JL501b	25051109	NSCT-5P896
D581	224470512	MTZJ5.1B	JL502a,JL502b	25051088	NSCT-4P875
D582,D583	223163 or	ISS133 or	JL501A,JL921b	25051110	NSCT-6P897
	223205	ISS270A	JL551a	25051109	NSCT-5P896
			JL571b	25050267	NSCT-3P95

**NOTE: THE COMPONENTS IDENTIFIED BY MARK △ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.**

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Plugs</b>		
JL602b	25055627	NPLG-6P589
JL971b	25055627	NPLG-6P589
P1501	25055038	NPLG-2P29
P501,P502	25055038	NPLG-2P29
P551a	25055135	NPLG-5P119
<b>Relays</b>		
RL581,RL582	25065517 or 25065510	NRL-2P5A-DC24-098 or NRL-2P5A-DC24-095

#### SECONDARY CIRCUIT PC BOARD

(NAETC-6110-1A/1B/1C/1D/1E/1F)

CIRCUIT NO.	PART NO.	DESCRIPTION
F915,F916	252166	△ 6.3A-UL/T-237,Fuse <D>
	252079	△ 6.3A-SE-EAK,Fuse <P/T/W/A/K>
F915a,F916a	25050065	△ YSH403T,Fuseholder
JL921a	25051110	NSCT-6P897,Socket
JL922b	25050285	NSCT-8P113,Socket
R941,R942	453532294	0.22Ω ±5%,1/2W, Metal resistor

#### PRIMARY CIRCUIT PC BOARD

(NAPS-6113-1A/1B/1C/1D/1E/1F)

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Transistor</b>		
Q951	2213284	2SC1740S-R
<b>Diodes</b>		
D951-D954	22380035	GP104003E
	22380032 or	1SR139-100 or
	22380260,	RL1N4003,
D955	223163 or	1SS133 or
	223205	1SS270A
<b>Transformer</b>		
T902	2300670A	△ NPT-1111D <D>
	2300671A	△ NPT-1111P <P/T/A>
	2300672	△ NPT-1111DG <W/K>
<b>Capcitors</b>		
C901	3500191	△ DE7150F-103M
C952	354742219	220 μ F,16V,Elect.
<b>Resistors</b>		
R901	431533355	△ 3.3MΩ,1/2W,Solid <D>
R951	453530824	8.2Ω ±5%,1/2W, Metal
<b>Fuseholders</b>		
F901a	25050065	△ YSH403T <D/W>
F902a	25050065	△ YSH403T <PT/W/A/K>
F903a	25050065	△ YSH403T <P>
<b>Fuses</b>		
F901	252198	△ 8A-UL <D/W>
F902	252077	△ 4A-SE-EAK <P/T/W/A/K>
F903	252075	△ 2.5A-SE-EAK <P>
	252074	△ 2A-SE-EAK <T/A>
<b>Sockets</b>		
JL942a	25051087	NSCT-3P874
<b>Plug</b>		
P901a	25055675	△ NPLG-2P631
<b>Switch</b>		
S901	25065437	△ NSS-22157P <W>

CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Relay</b>		
RL901	25065515 or 25065508	△ NRL-1P5A-DC12-096 or △ NRL-1P10A-DC12-093 <P/T/W/A/K>
	25065516 or 25065248	△ NRL-1P10A-DC12-097 or △ NRL-1P15A-DC12-29 <D>

#### FRONT/CENTER SPEAKER TERMINAL PC BOARD

(NAETC-6115-1A/1B/1C/1D/1E/1F)

CIRCUIT NO.	PART NO.	DESCRIPTION
C1541	374721034	0.01 μ F±5%,50V,Plastic capacitor <P/T/W/A/K>
C541,C542	374721034	0.01 μ F±5%,50V,Plastic capacitor <P/T/W/A/K>
JL503b	25051110	NSCT-6P897,Socket
P541	25060246	NTM-4PDPMN166,Terminal
P542	25060114	NTM-2PDML048,Terminal <D>
	25060247	NTM-2PDPMN167,Terminal <P/T/W/A/K>

#### AC OUTLET TERMINAL PC BOARD(NAETC-6116-1B/1C/1D)

(CIRCUIT NO. PART NO. DESCRIPTION)

CIRCUIT NO.	PART NO.	DESCRIPTION
P904	25051125	△ NSCT-4P912,Terminal <P/T/W>

#### POWER SWITCH PC BOARD(NASW-6117-1B/1C/1D/1E/1F)

230V and Worldwide models

CIRCUIT NO.	PART NO.	DESCRIPTION
C931	3500191	△ DE7150F-103M, Capacitor IS
C931a	27301216	△ Cover,capacitor
S931	25035550	△ NPS-111-L512P,Push switch

#### AC OUTLET TERMINAL PC BOARD(NAETC-6118-1A)

(CIRCUIT NO. PART NO. DESCRIPTION)

CIRCUIT NO.	PART NO.	DESCRIPTION
P902	25051639	△ NSCT-4P1426,Terminal <D>

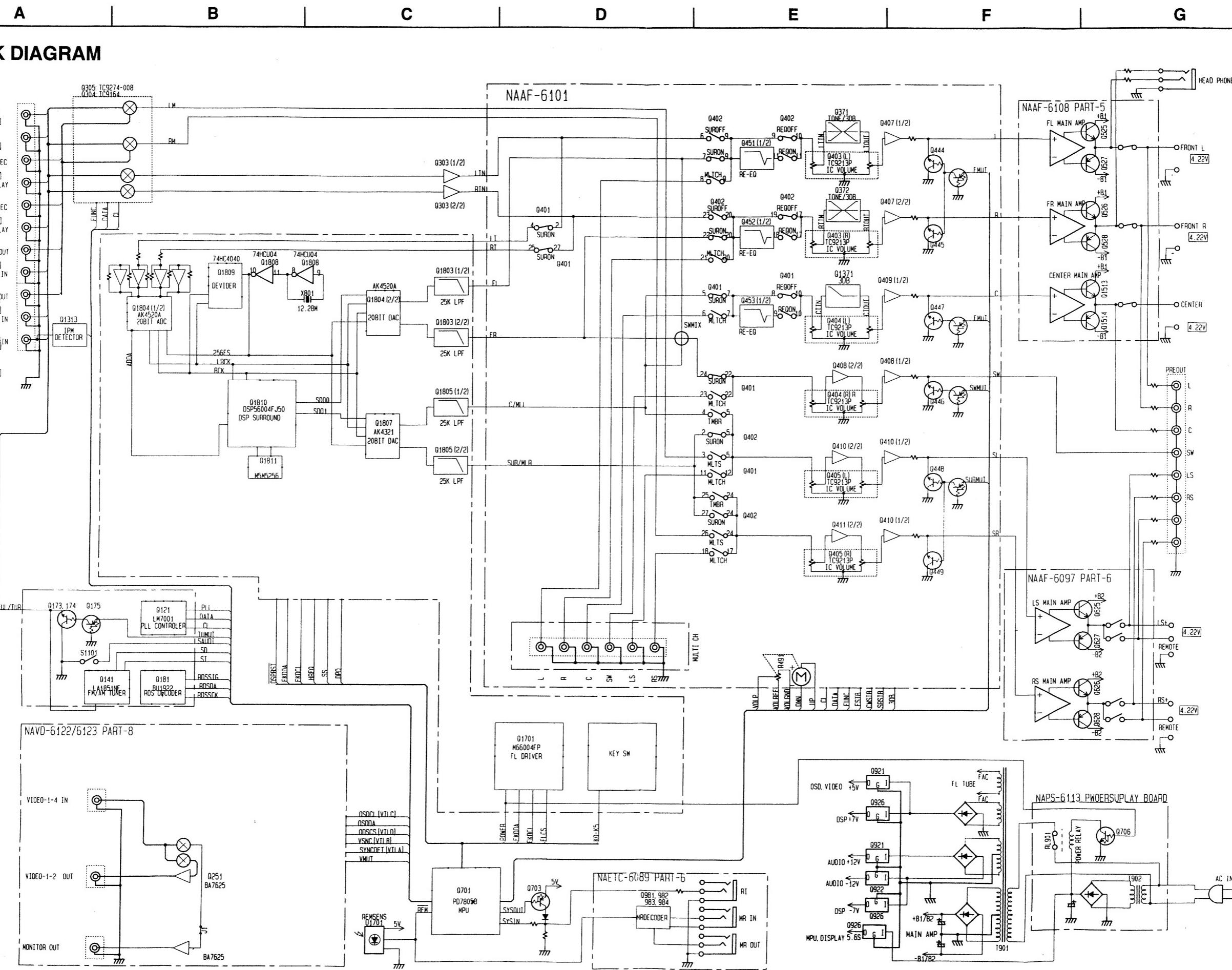
#### MR/RJ TERMINAL PC BOARD(NAETC-6096-1A/1B/1C/1D)

(CIRCUIT NO. PART NO. DESCRIPTION)

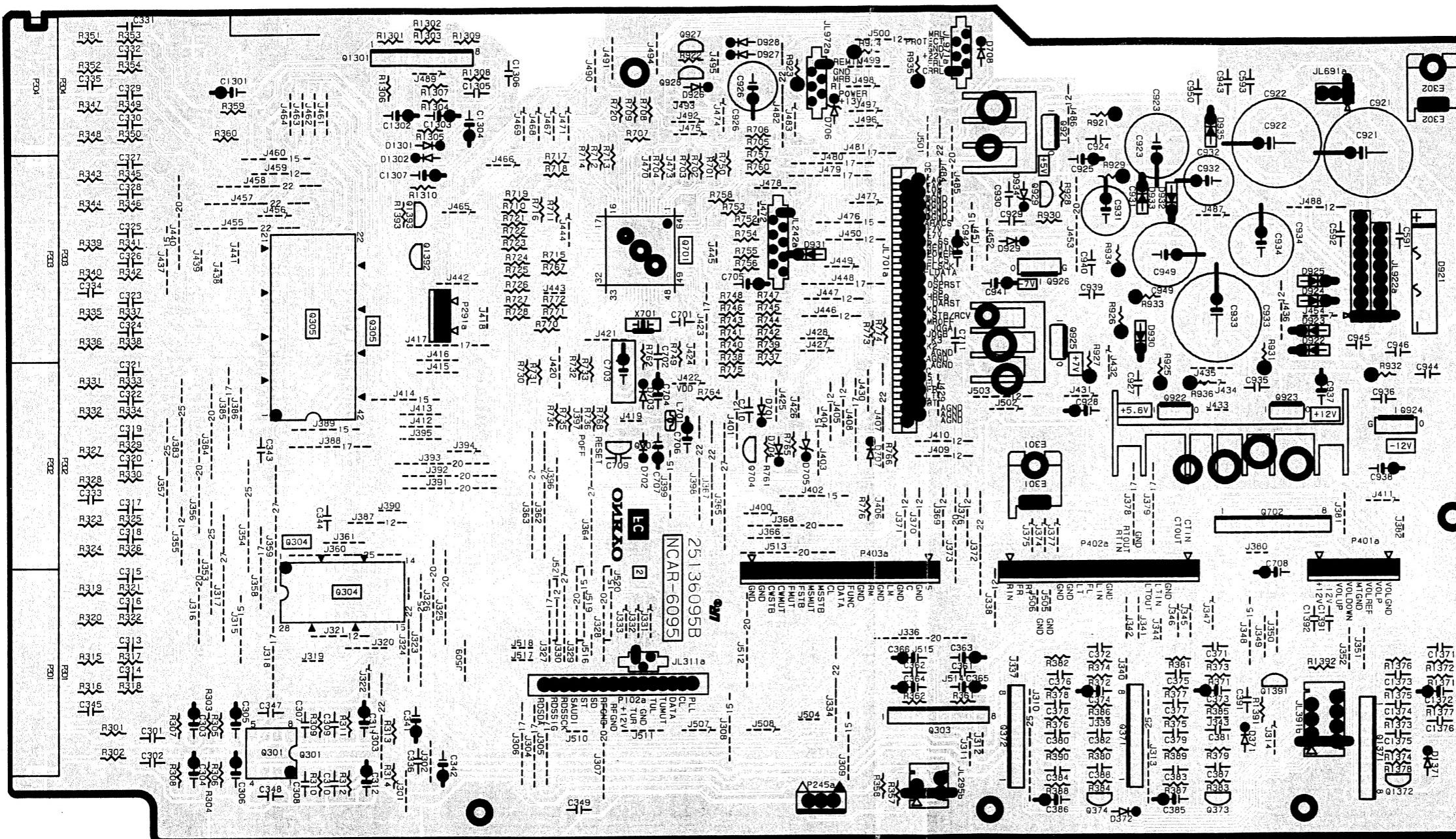
CIRCUIT NO.	PART NO.	DESCRIPTION
<b>Transistors</b>		
Q981,Q982	221282 or 2213560	DTC144ES or RN1204
Q983	24120043	ON3131 <D>
Q984	2213510 or 2214350	DTA114ES or RN2202 <D>
Q985	2213284 or 2212115	2SC1740S-R or 2SC2458-GR <D>
<b>Diodes</b>		
D981,D982	223163 or 223205	1SS133 or 1SS270A <P/T/W/K/A>
D983	223163 or 223205	1SS133 or 1SS270A
D984	223163 or 223205	1SS133 or 1SS270A <D>
<b>Capacitors</b>		
C981	374724724	4700pF±5%,50V,Plastic
C982	353741009	10 μ F,16V,Elect.
C983	353741009	10 μ F,16V,Elect. <D>
<b>Plugs</b>		
JL942b	25055624	NPLG-3P586
JL972b	25055627	NPLG-6P589

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>Socket</b>			<b>Resistors</b>	
JL242a	25051093	NSCT-9P880	R623,R624	443526804	68Ω ± 5%,1/2W, Metal oxide
	<b>Terminals</b>		R625-R628	443525604	56Ω ± 5%,1/2W, Metal oxide
P981	25045293	HSJ1003-01-012 <P/T/W/A/K>	R629-R932	443526804	68Ω ± 5%,1/2W, Metal oxide
	25045433	HSJ1003-01-013 <D>	R637,R638	5210288	N06HR2.2KBE,Trimming
P982	25045330 or 25045481	NPJ-2PDBL184 or NPJ-2PDBL299	R643,C644	443521514	150Ω ± 5%,1/2W, Metal oxide
			R645-R648	453530224	2.2Ω ± 5%,1/2W, Metal
			R649,R650	4000131	RGC22-0.22 OHMK,Metal plate
<b>SURROUND POWER AMPLIFIER PC BOARD (NAAF-6097-1A/1B/1C/1D)</b>			R655,R656	453630824	8.2Ω ± 5%,1W, Metal
			R669,R670	453530224	2.2Ω ± 5%,1/2W, Metal
			R675,R676	453532294	0.22Ω ± 5%,1/2W, Metal
	<b>Transistors</b>			<b>Relaies</b>	
Q601-Q606	2211733 or 2211732	2SC1845-E 2SC1845-F	RL681,RL682	25065517 or 25065510	NRL-2P5A-DC24-098 or NRL-2P5A-DC24-095
Q607,Q608	2213284 or 2212115	2SC1740S-R or 2SC2458-GR	JL601a	25051110	NSCT-6P897
Q609-Q612	2211354 or 2211353	2SA949-Y 2SA949-O	JL601A	25051091	NSCT-7P878
Q613,Q614	2211634 or 2211633	2SC2229-Y 2SC2229-O	JL691b	25050267	NSCT-3P95
Q615,Q616	2211354 or 2211353	2SA949-Y 2SA949-O	P601,P602	25055038	NPLG-2P29
Q617,Q618	2211634 or 2211633	2SC2229-Y 2SC2229-O	P611a	25055133	NPLG-3P117
Q619,Q620	2213284 or 2212115	2SC1740S-R or 2SC2458-GR	<b>SPEAKER TERMINAL PC BOARD(NAETC-6098-1A/1B/1C/1D)</b>		
Q621,Q622	2203010	2SC5171	C641-C644	374721034	0.01μF ± 5%,50V, Plastic capacitor<P/T/W/A/K>
Q623,Q624	2203000	2SA1930	JL601b	25051110	NSCT-6P897,Socket
Q625,Q626	2202922, 2202923, 2202373, 2202375 or 2202374	* 2SC5196-R, * 2SC5196-O, * 2SC4466-O, * 2SC4466-P or * 2SC4466-Y	P641	25060224 or 25060158	NTM-8PDML146 or NTM-8PDML084,Terminal
Q627,Q628	2202912, 2202913, 2202363, 2202365 or 2202364	* 2SA1939-R, * 2SA1939-O, * 2SA1693-O, * 2SA1693-P or * 2SA1693-Y	C1414	374723344	0.33μF ± 5%,50V,Plastic capacitor
Q629,Q630	2211733 or 2211732	2SC1845-E or 2SC1845-F	JL401b	25051087	NSCT-3P874,Socket
Q681,Q682	2213650	DTD113ZS	JL402a	25051093	NSCT-9P880,Socket
D601,D602	22380260, 22380032 or 22380035	RL1N4003, 1SR139-100 or GP104003E	JL603b	25055628	NPLG-7P590,Plug
D681,D682	223163 or 223205	ISS133 or ISS270A	P1401	25045458 or 25045300	NPJ-6PDBL279 or NPJ-6PDBL159,Terminal
L601,L602	231176S	S-1.3C <P/T/W/A>	P1402	25045298 or 25045456	NPJ-2PDBL157 or NPJ-2PDBL277,Terminal
	<b>Capacitors</b>		P1404	25045459 or 25045302	NPJ-1PDBL260 or NPJ-1PDBL161,Terminal
C601,C602	354742209	22μF,16V,Elect.	<b>TONE VOLUME PC BOARD(NAAF-6103-1A/1B/1C)</b>		
C607,C608	354742219	220μF,16V,Elect.	C395,C396	374721534	0.015μF ± 5%,50V,Plastic capacitor
C609,C610	354744709	47μF,16V,Elect.	JL391a	25051091	NSCT-7P878,Socket
C617,C618	354781009	10μF,50V,Elect.	R395,R396	5104356	N14RLC100KWT20Z,Variable resistor
C623,C624	374721044	0.1μF ± 5%,50V,Plastic			
C629,C630	354784719S	470μF,50V,Elect.			
C631	354781009	10μF,50V,Elect.			
C632-C634	354781019	100μF,50V,Elect.			

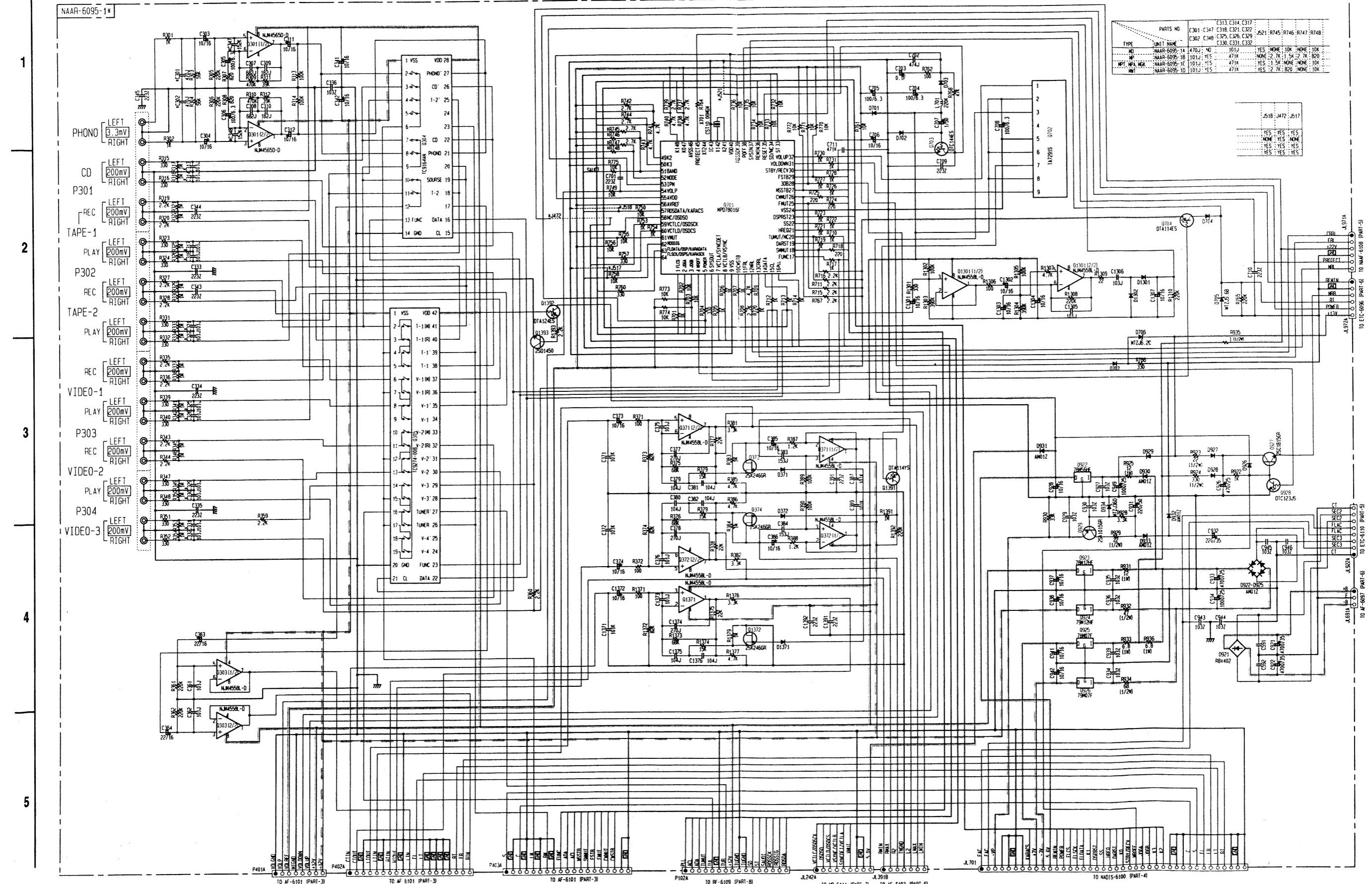
NOTE: D : 120V model only  
 P : European model only  
 T : Asian model only  
 W: Worldwide model only  
 K : Korean model only  
 A : Australian model only



## PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



## **SCHEMATIC DIAGRAM**



## PRINTED CIRCUIT BOARD- PARTS LIST

ELECTRO VOLUME CIRCUIT PC BOARD(NAAF-6101-1A/1B/1C)

CIRCUIT NO. PART NO. DESCRIPTION

## ICs

Q401 22240798 TC9162AN

Q402 22240799 TC9161AN

Q403-Q405 22240266 TC9213P

Q406-Q411 22240293 or NJM4558L-D or

Q451-Q453 22240247 BA15218N

## Transistors

Q441-Q443 2213510 or DTA114ES or

2214350 RN2202

Q444-Q449 2213631 or RN1241-A or

2213632 RN1241-B

## Diodes

D441-D443 223163 or 1SS133 or

223205 1SS270A

## Capacitors

C404-C410 354741009 10  $\mu$  F,16V,Elect.C411-C413 354780229 2.2  $\mu$  F,50V,Elect.C417 374721034 0.01  $\mu$  F $\pm$ 5%,50V,Plastic <D>C420-C422 354741009 10  $\mu$  F,16V,Elect.C423-C428 354780229 2.2  $\mu$  F,50V,Elect.C435-C440 354744709 47  $\mu$  F,16V,Elect.C441-C443 354741009 10  $\mu$  F,16V,Elect.C451-C453 354741009 10  $\mu$  F,16V,Elect.C454-C459 374721224 1200pF $\pm$ 5%,50V,PlasticC460-C462 354741009 10  $\mu$  F,16V,Elect.C463-C465 374722224 2200pF $\pm$ 5%,50V,PlasticC471-C473 354741009 10  $\mu$  F,16V,Elect.C481,C482 354741009 10  $\mu$  F,16V,Elect.

## Resistors

R491 5146066 N16RGL20KB25F,Variable

## Sockets

JL401a 25051087 NSCT-3P874

JL402b 25051093 NSCT-9P880

P401b 25051233 NSCT-8P1023

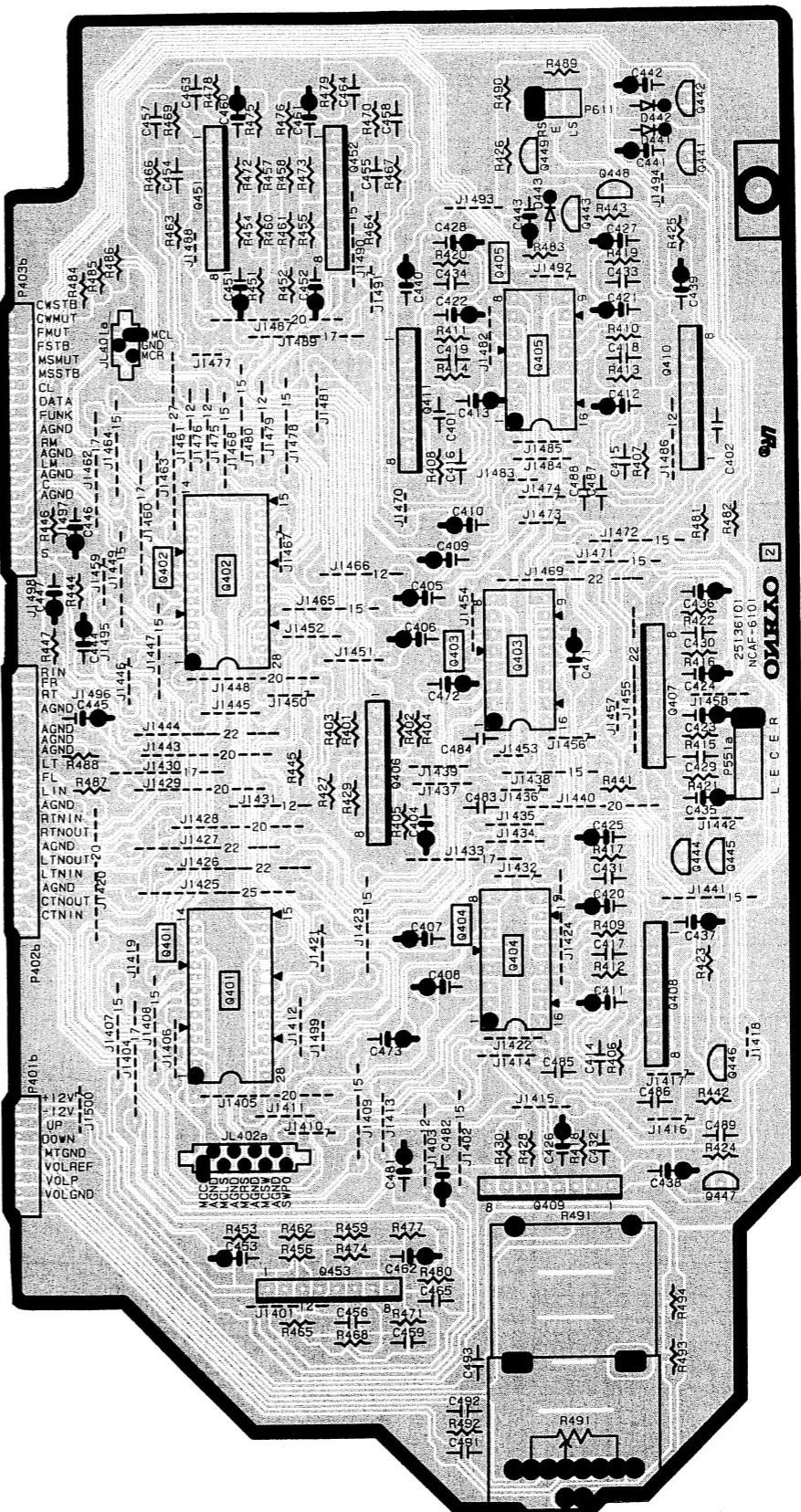
P402b 25051530 NSCT-19P1317

P403b 25051530 NSCT-19P1317

P551 2009990466UL NSAS-10P0620

P611 2009990449UL NSAS-6P0600

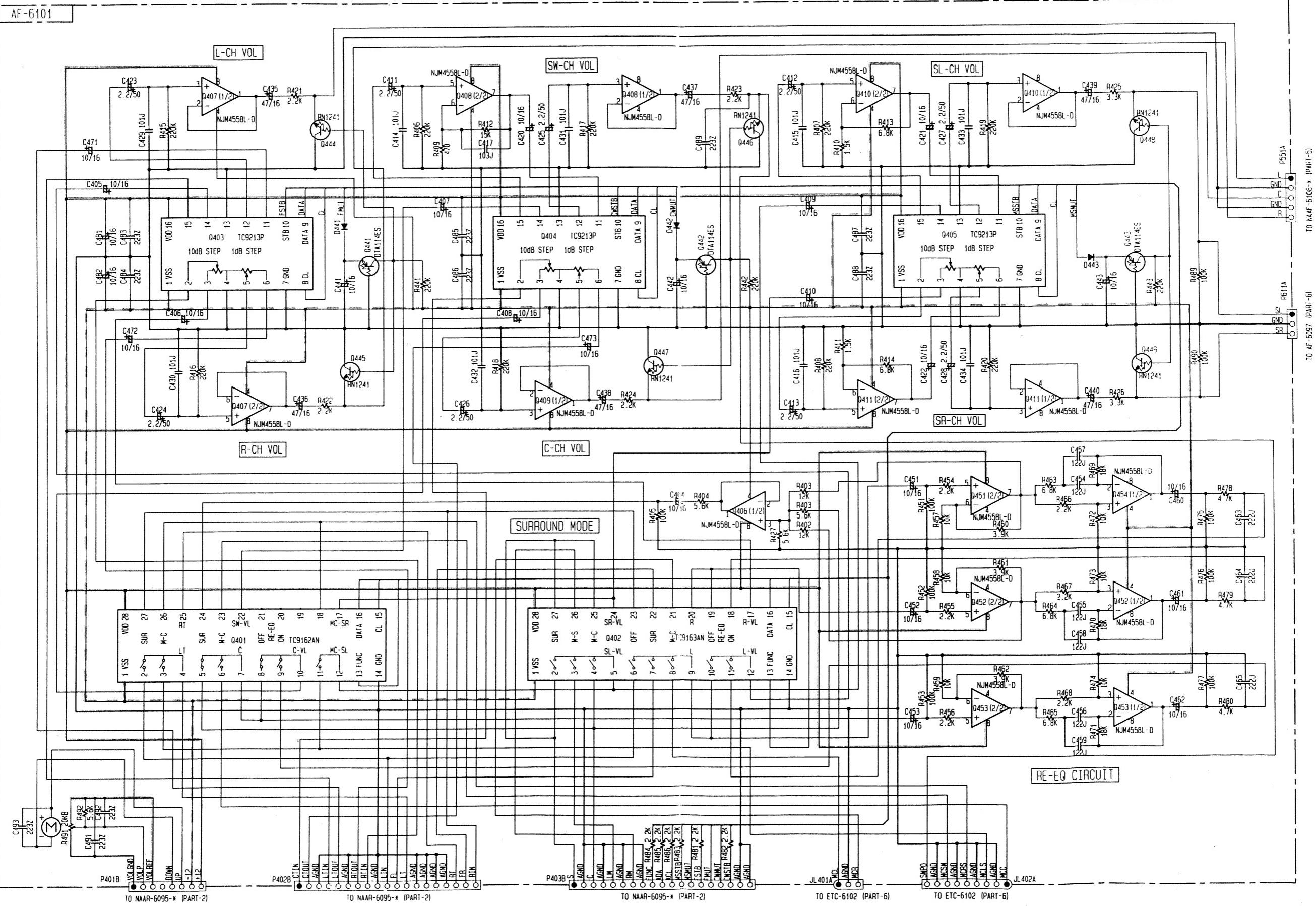
## PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



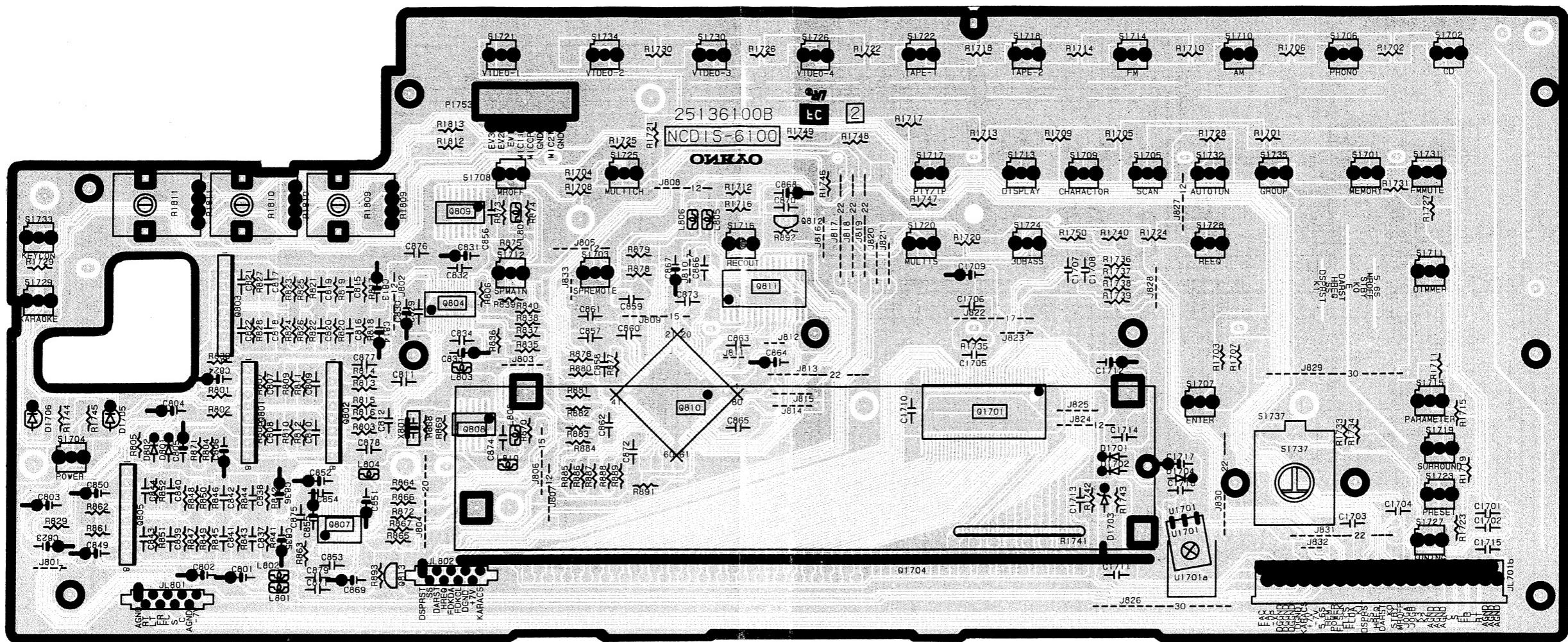
ELECTRO VOLUME CIRCUIT PC BOARD

A B C D E F G

## SCHEMATIC DIAGRAM



## PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



## PRINTED CIRCUIT BOARD -PARTS LIST

## DISPLAY CIRCUIT PC BOARD (NADIS-6100-1A/1B/1C)

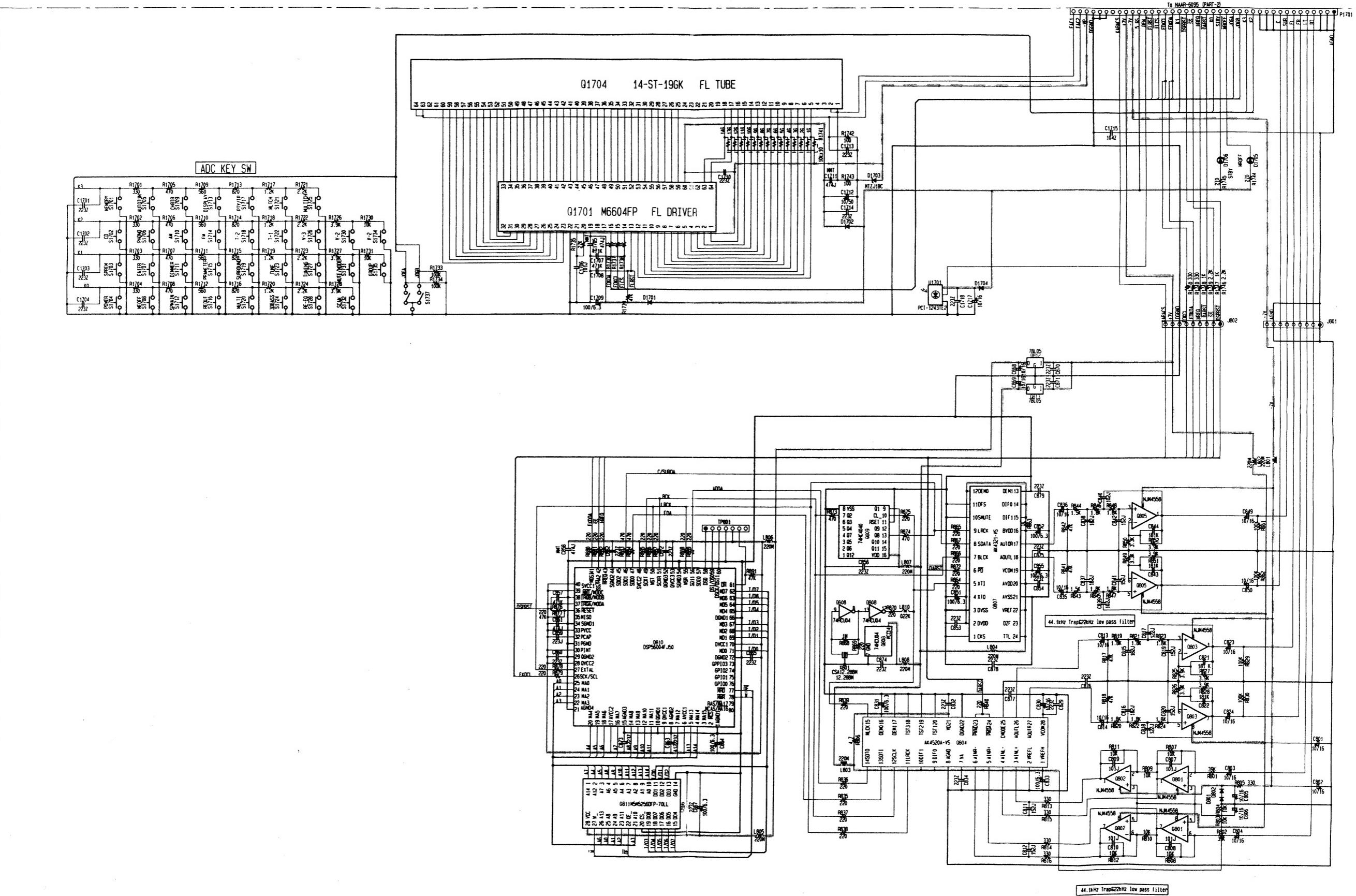
CIRCUIT NO.	PART NO.	DESCRIPTION
	FL tube	
Q1704	212163	14-ST-19GK
	Remote sensor	
U1701	241305	GP1U281X
	ICs	
Q1701	22240685R9	M66004FP
Q801-Q803	22240293 or NJM4558L-D or BA15218N	
Q805	22240247	
Q804	22241129R9	AK4520A-VF
Q807	22241130R9	AK4321-VFE1
Q808	222740046R9	74HCU04
Q809	22241126R9TO	TC74HC4040AF
Q810	22240831R3 or 22240940R3	DSP56004FJ50 or DSP56004FJ66
Q811	22241108R9	M5M5256DFFP-70L
Q812,Q813	222780053	78L05
	Diodes	
D1701,D1702	223163 or 223205	1SS133 or 1SS270A
D1705,D1706	225291D	SEL4910D-D
D1703	224471803	MTZJ18C
D801,D802	223163 or 223205	1SS133 or 1SS270A
	Coils	
L801-L808	233454K220	NCH-1452 220K
L810	233454M022	NCH-1452 022M

## DISPLAY CIRCUIT PC BOARD

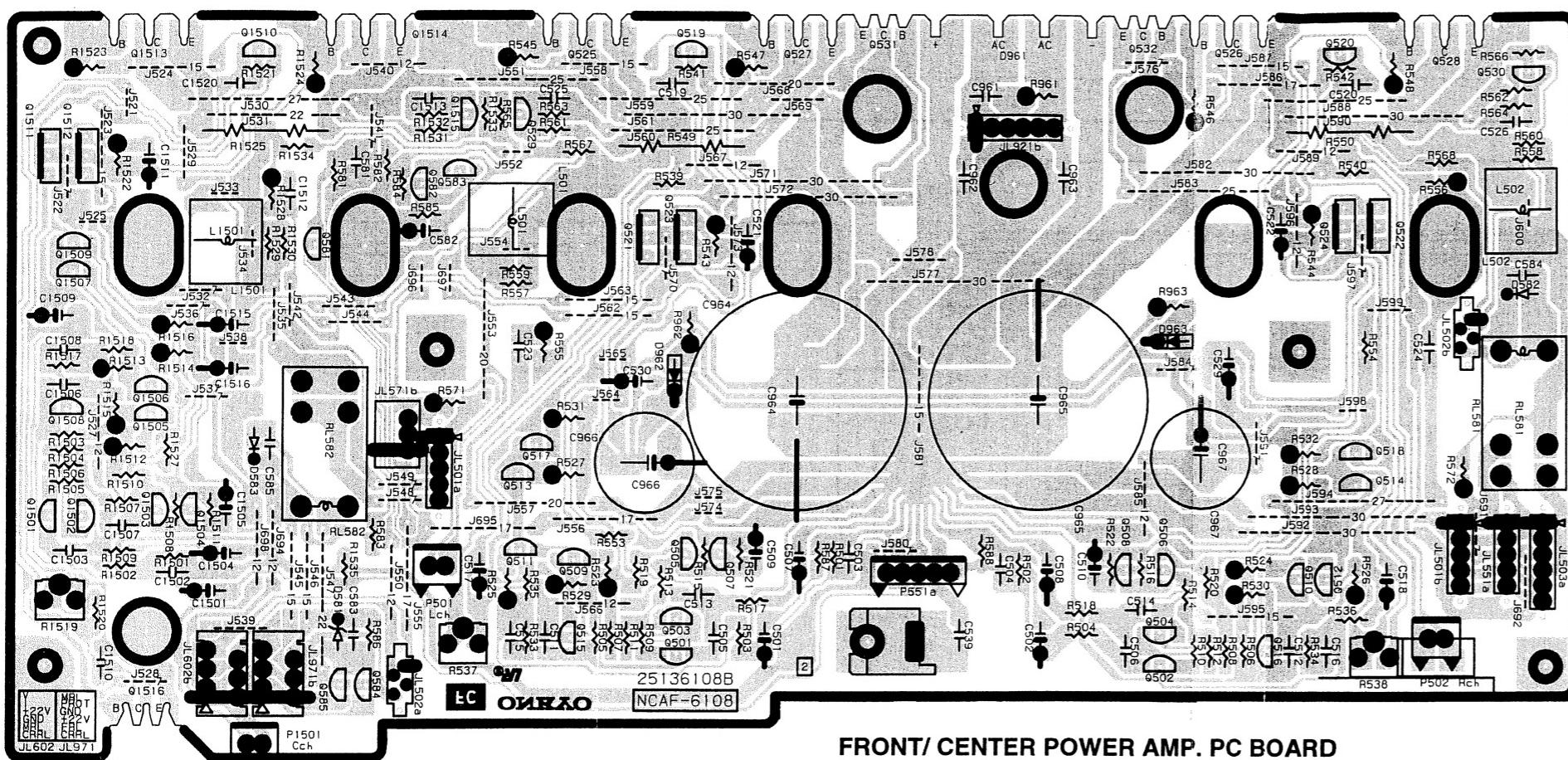
CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C861	375524744	0.47 μF ± 5%, 50V, Plastic
C864,C867	353721019	100 μF, 6.3V, Elect.
C868,C869	353741009	10 μF, 16V, Elect.
	Resistors	
R1741	49163103414	RM1/10IJ-10K*14, Array
	Sockets	
JL701b	25051884, 25050946 or 25051344	NSCT-40P1671, NSCT-40P733 or NSCT-40P1133
	Switches	
S1701-S1716	25035652	NPS-111-S604
S1717	25035652	NPS-111-S604 <P>
S1718-S1725	25035652	NPS-111-S604
S1727,S1728	25035652	NPS-111-S604
S1730-S1732	25035652	NPS-111-S604
S1734,S1735	25035652	NPS-111-S604
S1737	25065528	EC16B24104
	Holders	
U1701a	27191042	Remote sensor
Q1704a	27191001	FL tube

**A** | **B** | **C** | **D** | **E** | **F** | **G**

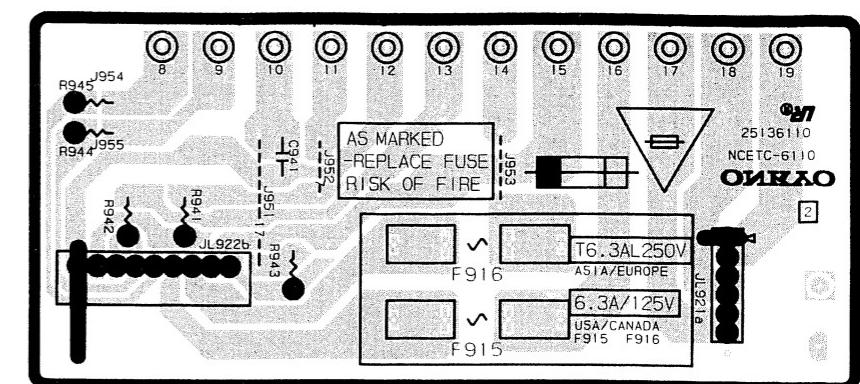
## **SCHEMATIC DIAGRAM**



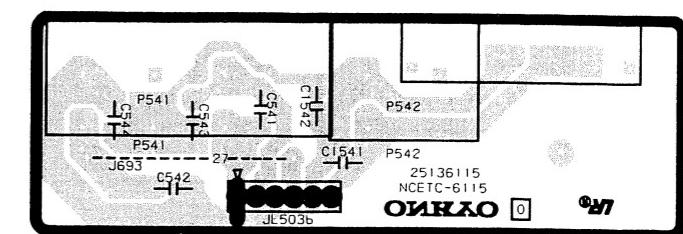
PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



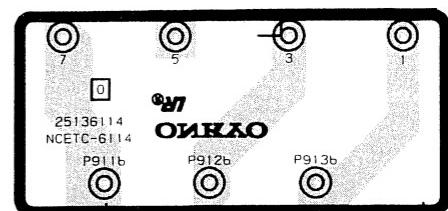
## **FRONT/ CENTER POWER AMP. PC BOARD**



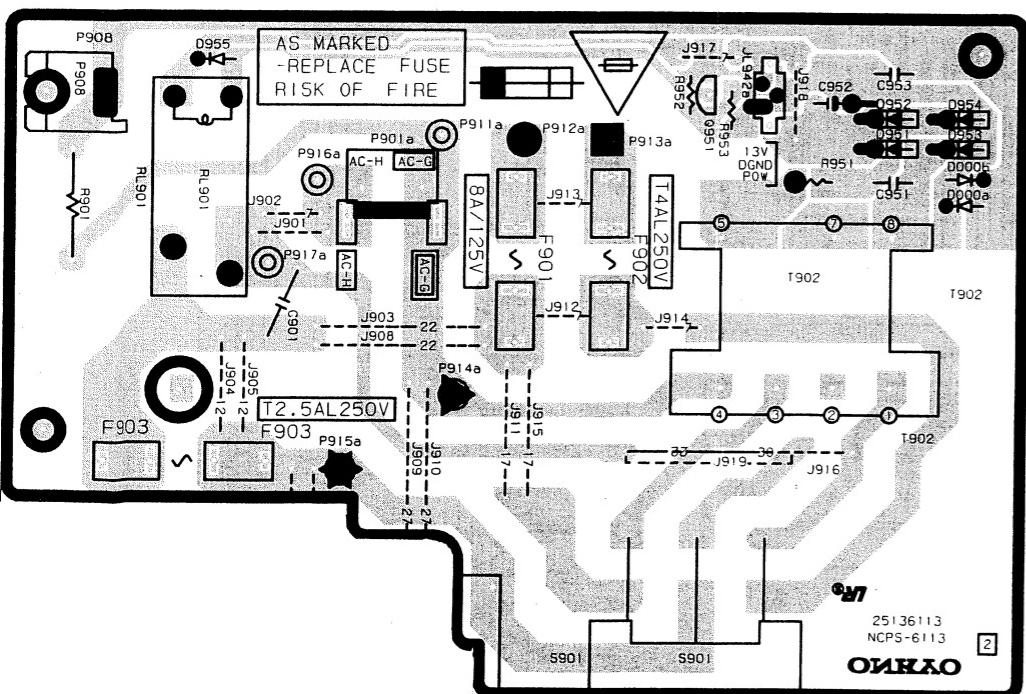
## **SECONDARY CIRCUIT PC BOARD**



#### **FRONT/ CENTER SPEAKER TERMINAL PC BOARD**



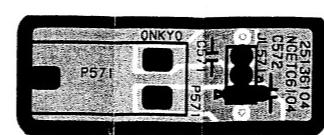
## **TRANSFORMER TERMINAL PC BOARD**



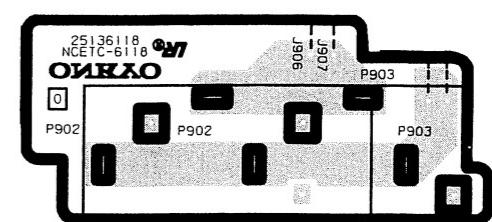
## **PRIMARY CIRCUIT PC BOARD**



## **AC OUTLET TERMINAL PC BOARD**

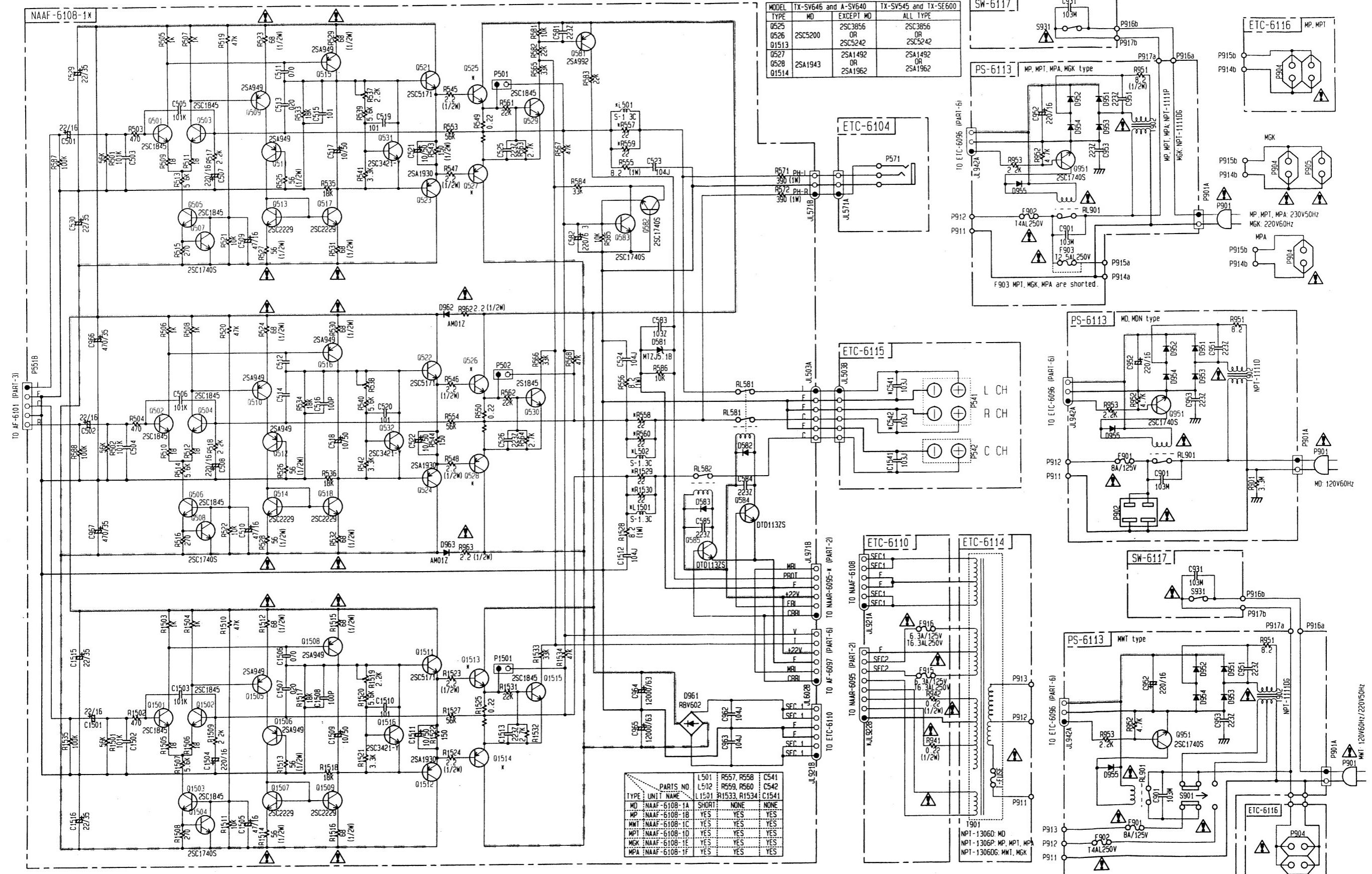


## **HEADPHONE TERMINAL PC BOARD**

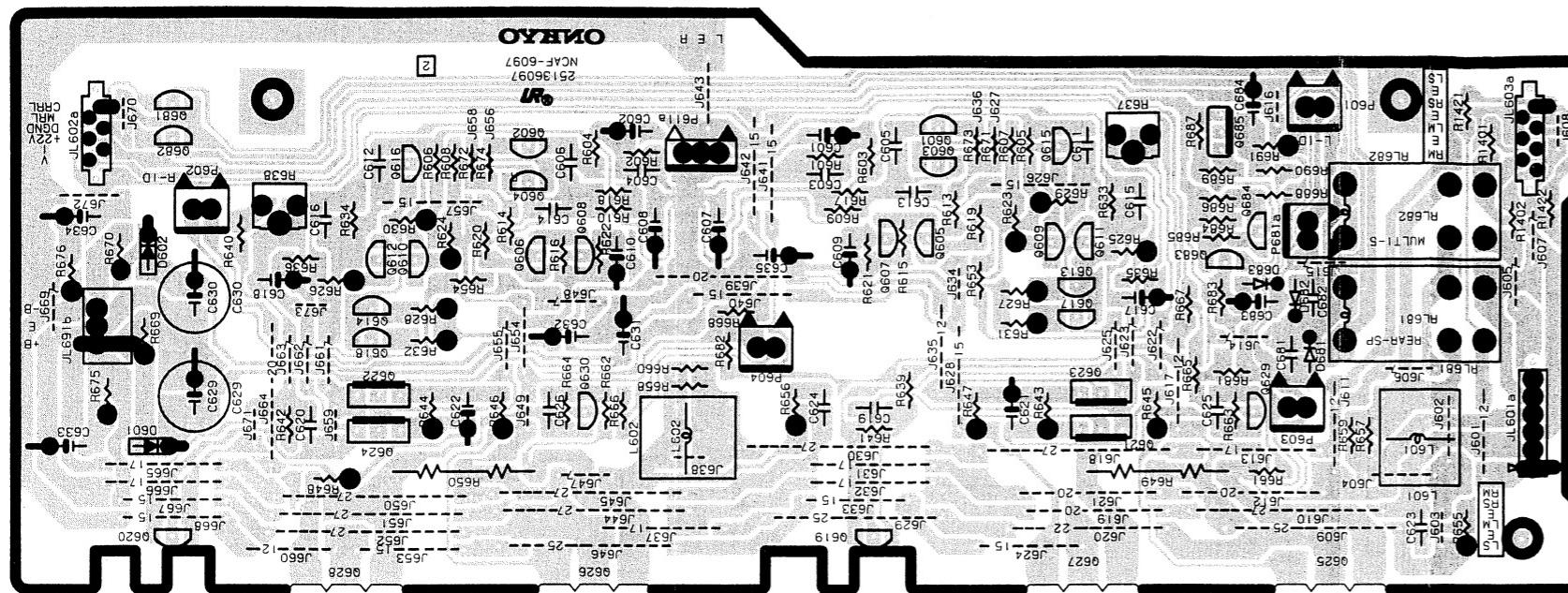


## **AC OUTLET TERMINAL PC BOARD**

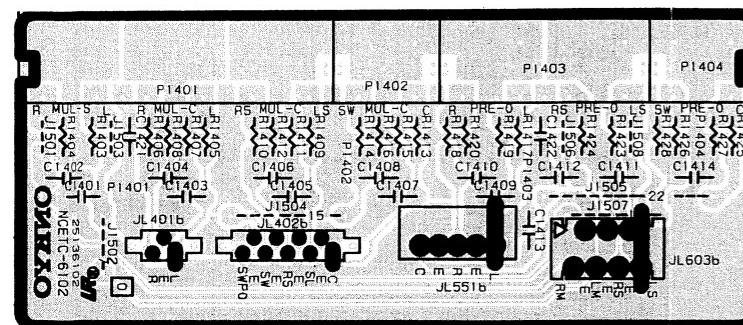
## **SCHEMATIC DIAGRAM**



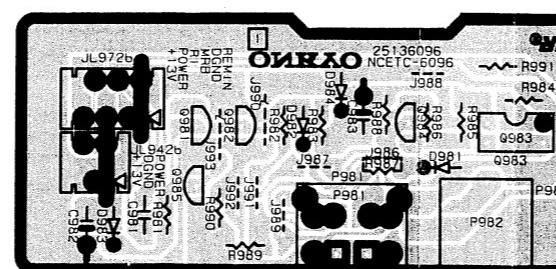
## **PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE**



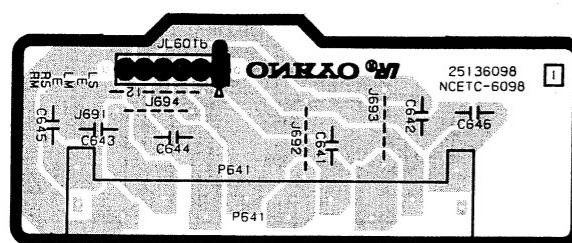
## **SURROUND POWER AMP PC BOARD**



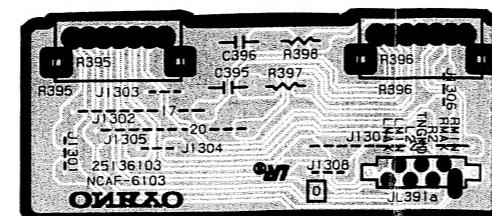
**PRE. OUT/ MAIN IN TERMINAL PC BOARD**



SPEKAR TERMINAL PC BOARD



## **MR/ RI TERMINAL PC BOARD**



## **TONE VOLUME PC BOARD**

## **ADJUSTMENT PROCEDURES**

## **Idling Current Adjustment**

Connect the DC voltmeter to the terminals P501, P502, and P1501 (VCT and IID) on Front/Center power amp. pc board. After turn POWER on, adjust the trim resistors R537, R538, and R1519 so that the indicator of voltmeter becomes 0.5mV.

Connect the DC voltmeter to the terminals P601 and P602 (Vct and IID) on Surround power amp. pc board. After turn POWER on, adjust the trim resistors R637, and R638 so that the indicator of voltmeter becomes 1.5mV.

Allow the unit to warm up for about 5 minutes and check the voltage of these terminals.

When the voltage is less than 4.0mV, adjust trim resistors so that the indicator of voltmeter becomes 4mV.

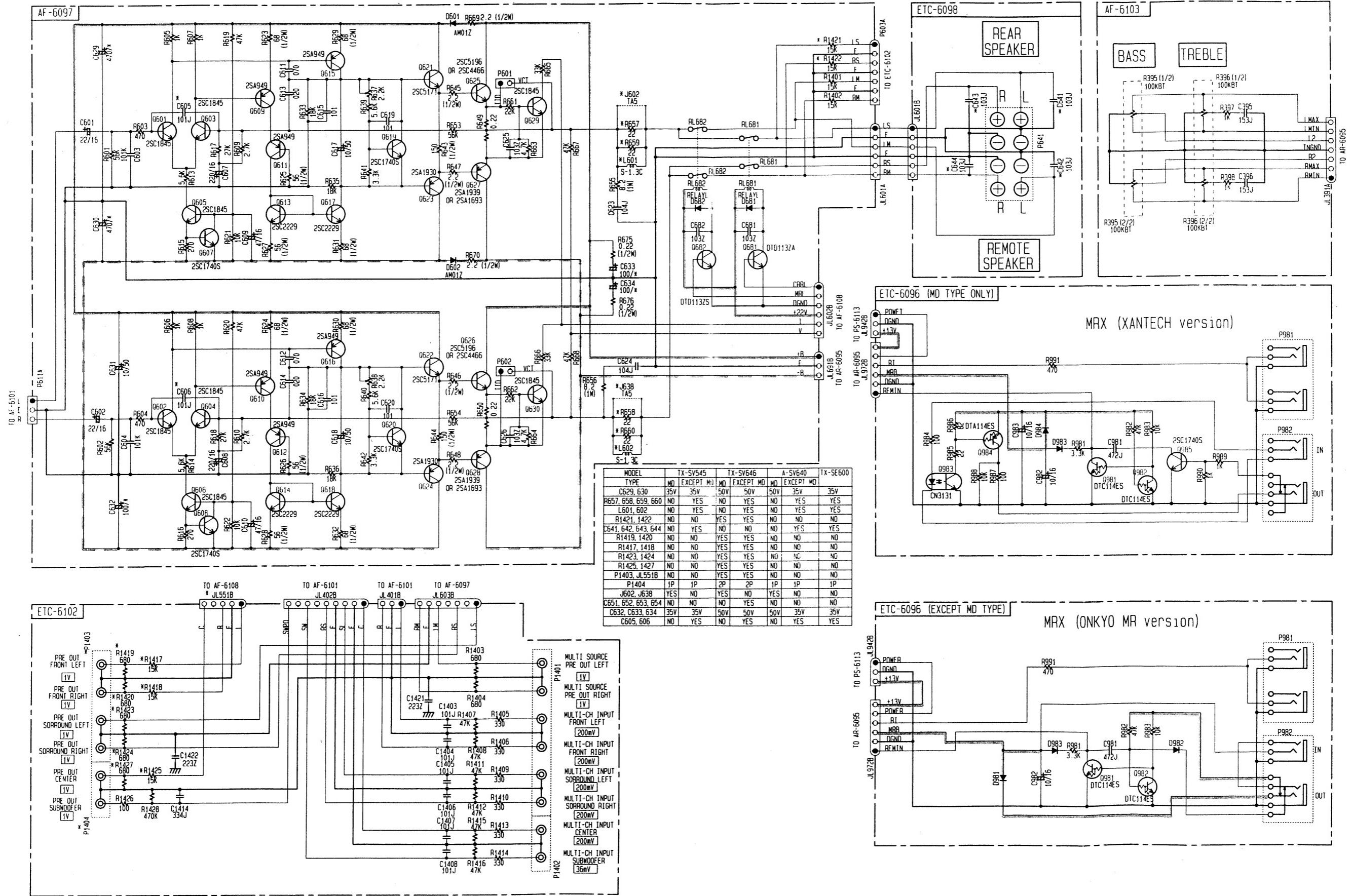
When the voltage is 4.0mV to 7.5mV, you are not neccessary to adjust.

When the voltage is more than 7.5mV, adjust trim resistors so that the indicator of voltmeter becomes 7.5mV.

Note: No load, No signal

A | B | C | D | E | F | G

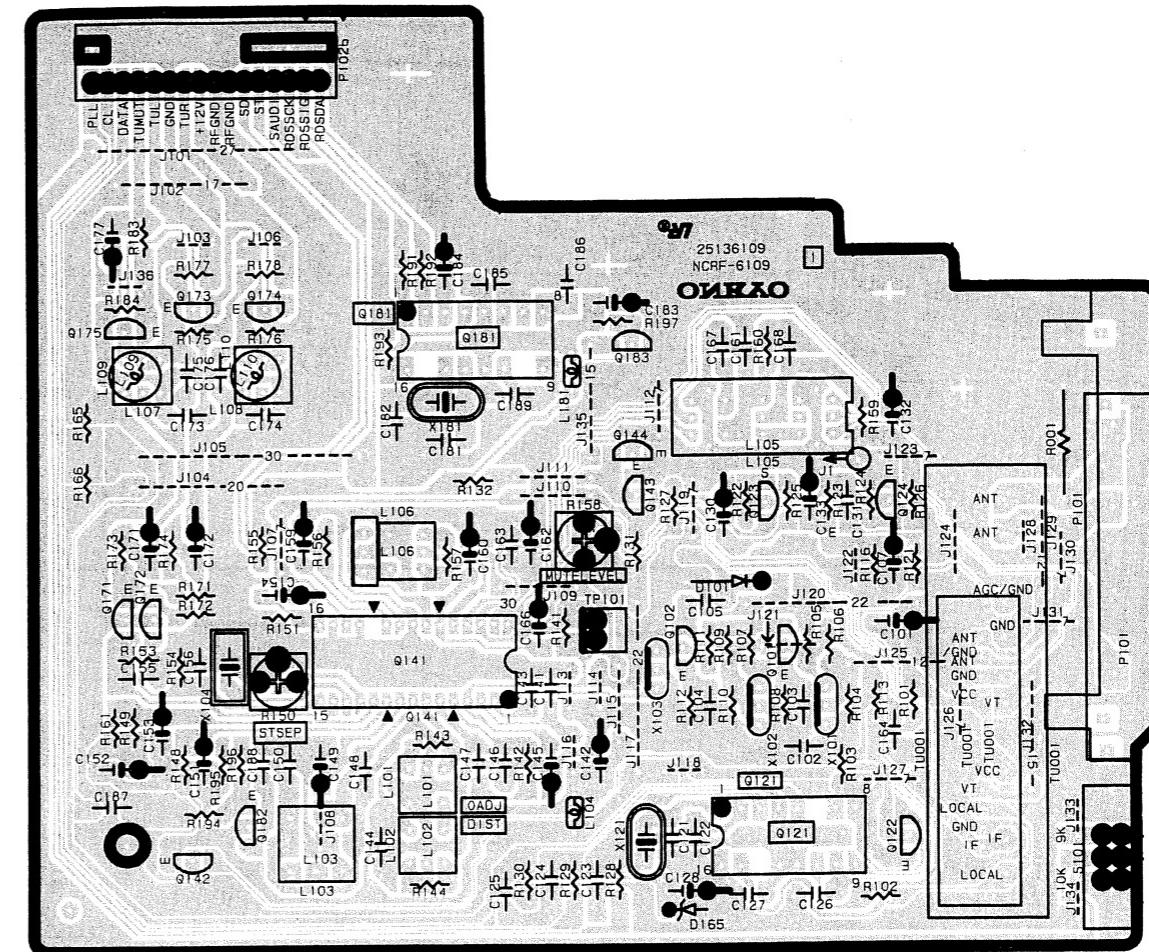
## SCHEMATIC DIAGRAM



## PRINTED CIRCUIT BOARD - PARTS LIST

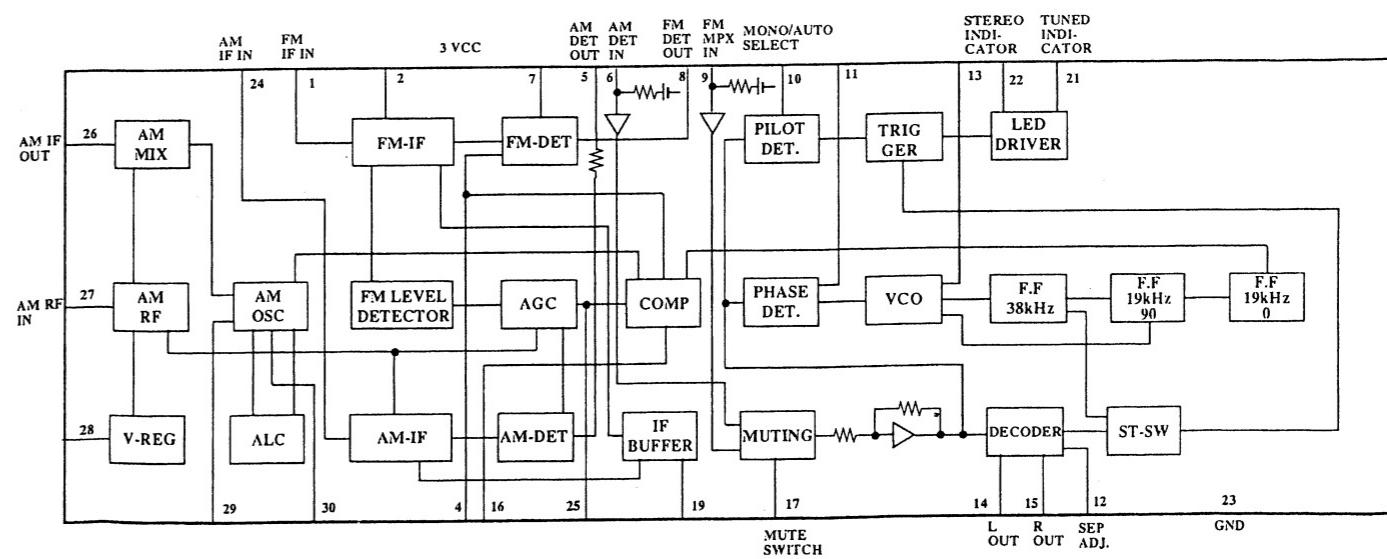
CIRCUIT NO.	PART NO.	DESCRIPTION	TUNER CIRCUIT PC BOARD(NARF-6109-1A/1B/1C/1D/1E/1F)				
Oscillators			CIRCUIT NO. PART NO. DESCRIPTION				
X121	3010141	XTL-7.2M	Front end	TU001	240099 ENV172A0G1 <P/T/W/A/K>		
X181	3010203	AF6146CG <P>			240107 TFFJ2U552A <D>		
<b>Capacitors</b>			<b>ICs</b>	Q121	22241076 or LM7001J or		
C101,C128	354741019	100 $\mu$ F,16V,Elect.			22240090 LM7001		
C130,C159	354780229	2.2 $\mu$ F,50V,Elect.		Q141	22240983 LA1851N-F		
C131	374722234	0.022 $\mu$ F $\pm$ 5%,50V,Plastic		Q181	22241124 BU1922 <P>		
C132,C153	354783399	0.33 $\mu$ F,50V,Elect.	<b>Transistors</b>				
C133,C142	354741019	100 $\mu$ F,16V,Elect.		Q101	2210746 2SC945A-P <P/W/T/A/K>		
C145,C149	354780479	4.7 $\mu$ F,50V,Elect.		Q102	2211723 2SC1923-O		
C146	374723324	3300pF $\pm$ 5%,50V,Plastic		Q122,Q142	2213510 or DTA114ES or		
C147	374721034	0.01 $\mu$ F $\pm$ 5%,50V,Plastic <P/T/W/A/K>		Q122,Q142	2214350 RN2202		
C147	374721534	0.015 $\mu$ F $\pm$ 5%,50V,Plastic <D>		Q123	2212445 2SK365-GR		
C151,C152	354780109	1 $\mu$ F,50V,Elect.		Q124	2213284 or 2SC1740S-R or		
C154,C162	354741009	10 $\mu$ F,16V,Elect.		Q171,Q172	2212115 2SC2458-GR		
C155,C156	374721034	0.01 $\mu$ F $\pm$ 5%,50V,Plastic <D>		Q143	221282 or DTC144ES or		
C155,C156	374724724	4700pF $\pm$ 5%,50V,Plastic <P/T/A/K>		Q143	2213560 RN1204		
C155,C156	374725624	5600pF $\pm$ 5%,50V,Plastic <W>		Q144	2213640 or DTC123JS or		
C160	354784799	0.47 $\mu$ F,50V,Elect.		Q144	2214660 RN1205		
C166	354741009	10 $\mu$ F,16V,Elect.		Q173,Q174	2215024 2SD1468S-R		
C168	374724734	0.047 $\mu$ F $\pm$ 5%,50V,Plastic		Q175	2213510 or DTA114ES or		
C171,C172	354741009	10 $\mu$ F,16V,Elect.		Q175	2214350 RN2202		
C173,C174	374722724	2700pF $\pm$ 5%,50V,Plastic <P/T/W/A/K>		Q182	2213284 or 2SC1740S-R or		
C175,C176	374721024	1000pF $\pm$ 5%,50V,Plastic <D>		Q182	2212115 2SC2458-GR <P>		
C177	354780229	2.2 $\mu$ F,50V,Elect.	<b>Diodes</b>	D165	224470512 MTZJ5.1B		
C183	354721019	100 $\mu$ F,6.3V,Elect. <P>			<b>Transformers and coils</b>		
C184	354780229	2.2 $\mu$ F,50V,Elect. <P>		L01	233457 NFIF-4081		
C186	374725614	560pF $\pm$ 5%,50V,Plastic <P>		L02	233458 NFIF-4082		
<b>Resistors</b>				L03	233501 NMC-3088 <P/T/W/A/K>		
R001	431533355	3.3M $\Omega$ ,1/2W,Solid <D>		L04	233454M022 NCH-1452 022M		
R150	5210261	N06HR5KBC,Trimming		L05	232174 NMRF-5077		
R158	5210263	N06HR20KBC,Trimming		L06	232176 NMIF-6094		
<b>Terminals</b>				L07,L108	233484 NMC-4085 <P/T/W/A/K>		
P101	25060239 or	NTM-4PDML161 or		L09,L110	231092 NCH-2140 <D>		
	25060195	NTM-4PDML117 <D>		L181	233454K220 NCH-1452 220K <P>		
	25060222 or	NTM-2PDML144 or	<b>Cermaic filters</b>				
	25060117	NTM-2PDML051 <P/T/W/A/K>					
<b>Sockets</b>							
P102b	25050986	NSCT-14P773 <D/T/W/A/K>		X101	3010071 SFE-10.7MA5 RED		
P102b	25050987	NSCT-16P774 <P>		X102	3010071 SFE-10.7MA5 RED <P/T/W/A/K>		
<b>Switch</b>				X103	3010071 SFE-10.7MA5 RED <D>		
S101	25065286	NSS-22112 <W>		X103	3010130 SFE10.7MZ2K <P/T/W/A/K>		
<b>Plug</b>				X104	3010268 CSB456F23		
TP101	25055038	NPLG-2P29					

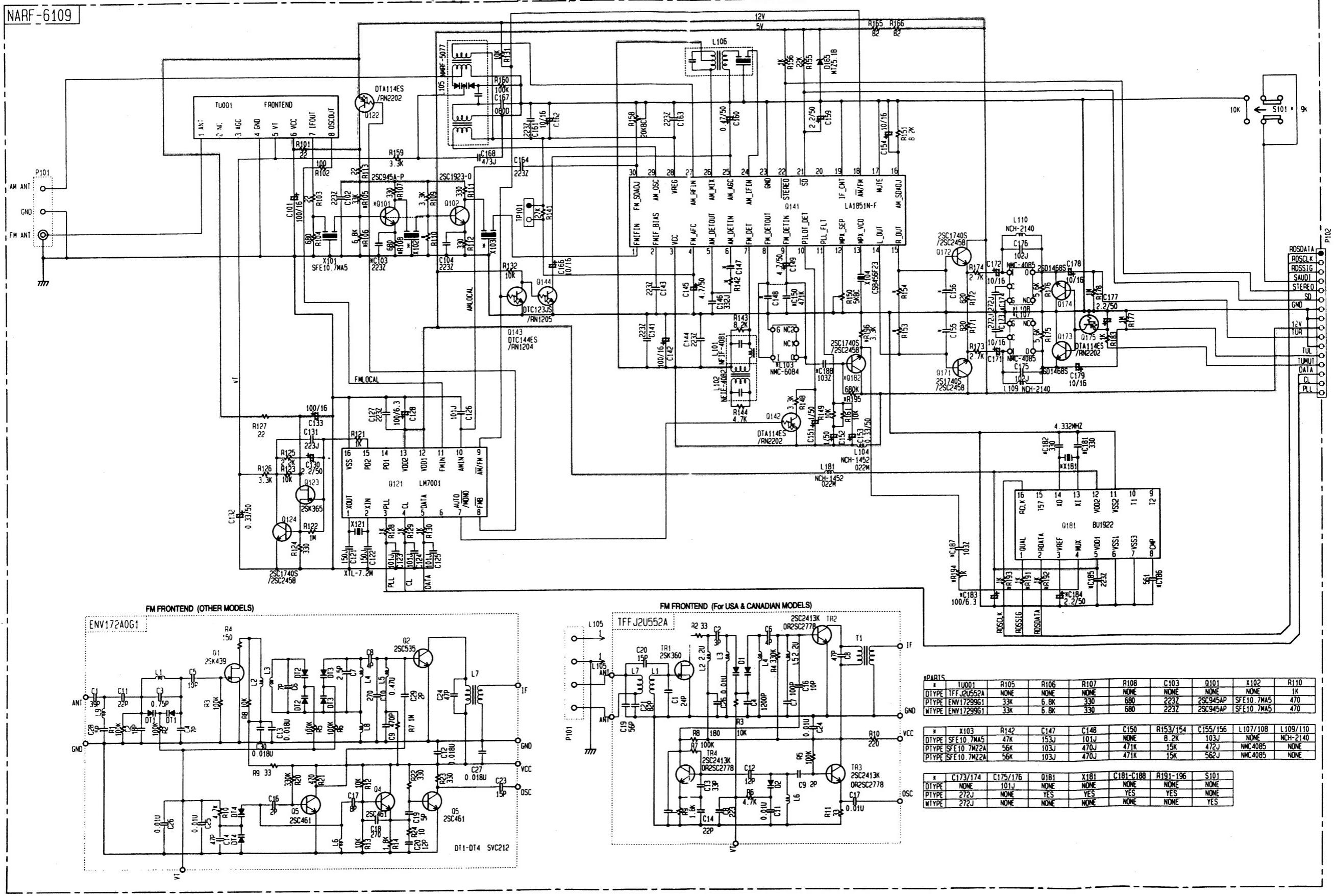
## PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



TUNER CIRCUIT PC BOARD

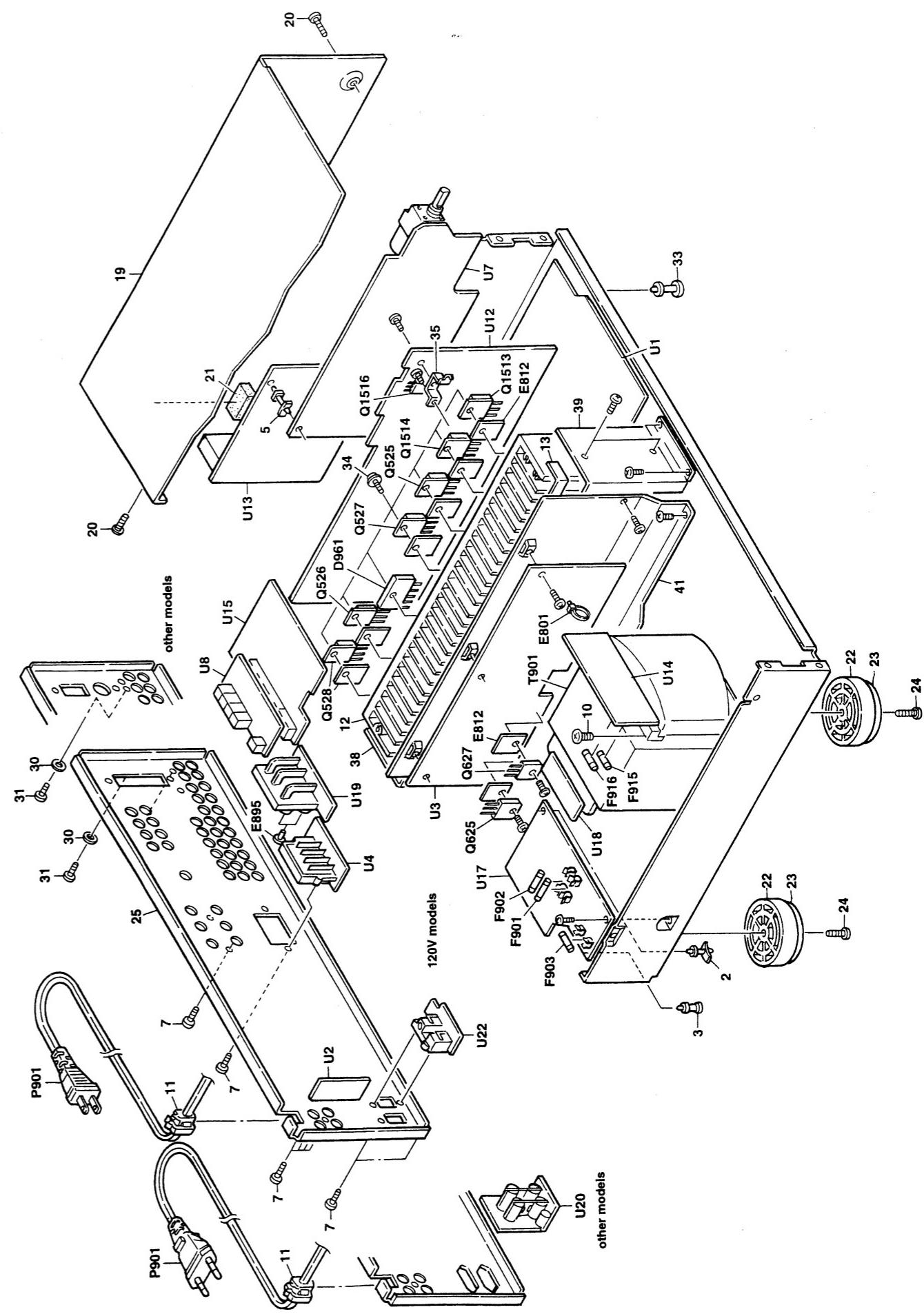
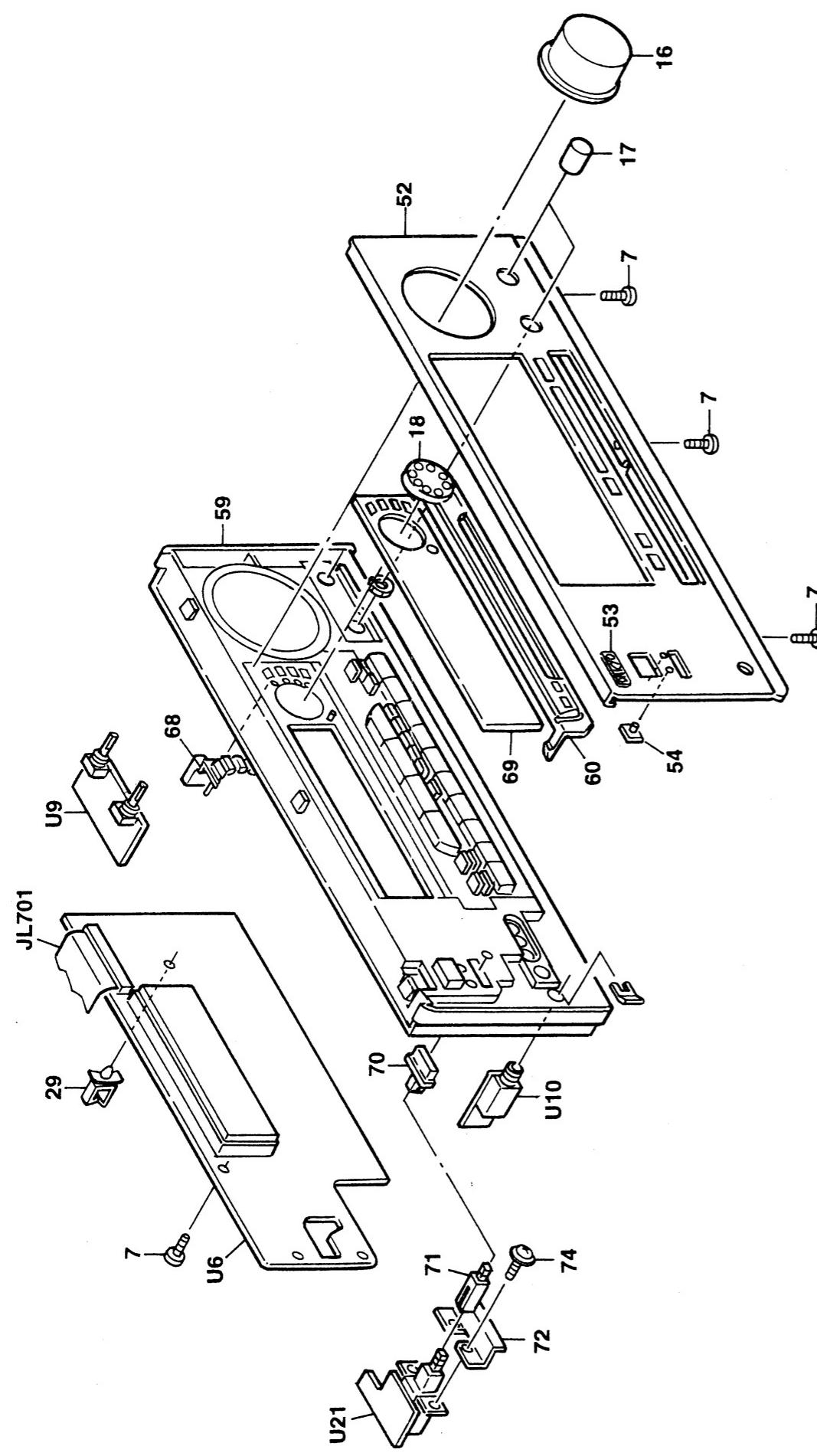
## LA1851N-F (FM IF, MPX and AM Radio System)



**A****B****C****D****E****F****G****SCHEMATIC DIAGRAM**

## **EXPLODED VIEW**

TX-SV545 TX-SV545

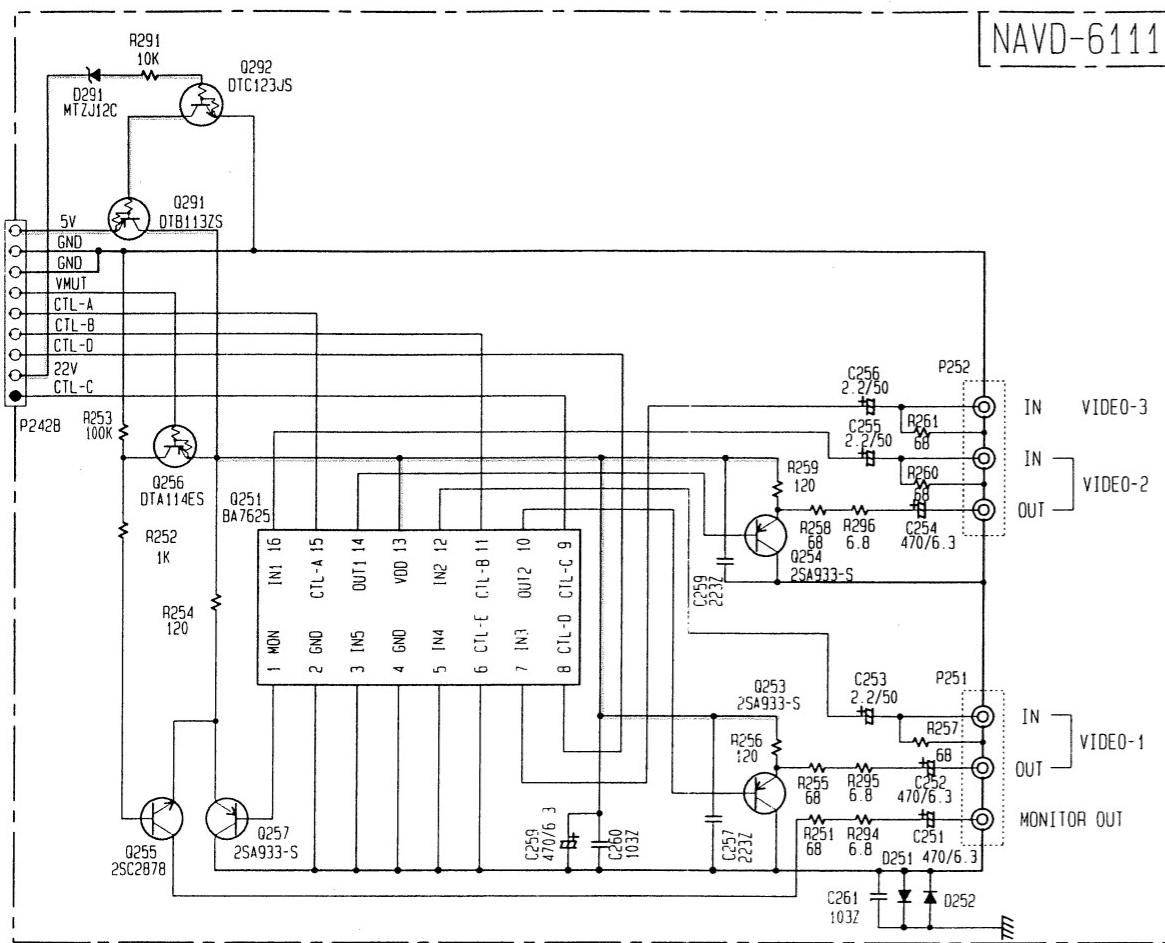


**PARTS LIST**

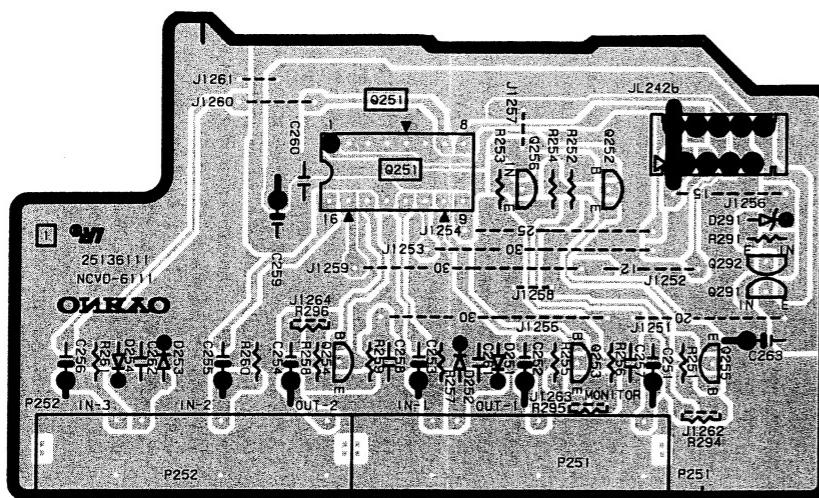
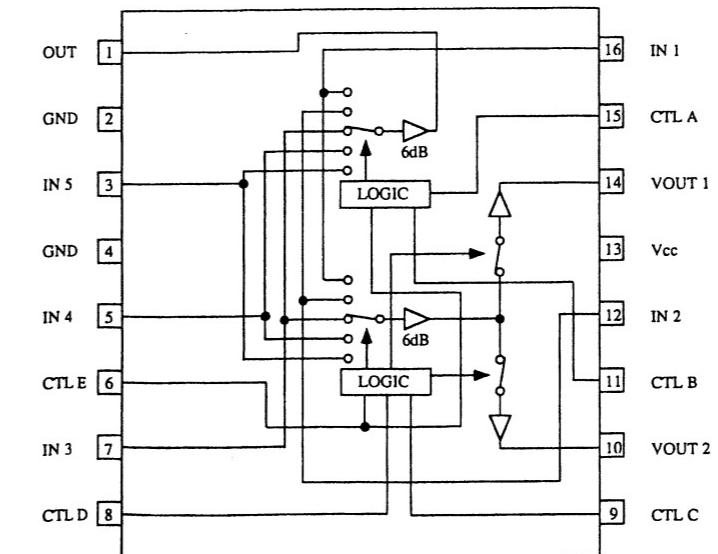
REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1	27100328A	Chassis	60	27215278	NOTE: <D>: 120V, model only <P>: European model only <T>: Asian model only <W>: Worldwide model only
2	27190503A	KGLS-8RF Holder	63	27191014	<A>: Australian model only <K>: Korean model only <B>: Black model only <S>: Silver model only
3	27190428A	KGLS-10RF Holder	68	28325542	Knob, Mode <B>
5	27190062	KGLS-12S,Holder	68	28325543	Knob, Mode <S>
7	838130088	3TTB+8B;Self-tapping screw	69	28191792A	Clean plate <B>
10	83040089	4TTC+8C(BC),Self-tapping screw	69	28191793A	Clean plate <S>
11	27300750	△ #2271, Bushing cord	70	28325497A	Knob, Power <PT/W/A/K>
12	27160387	Heatsink	70	28325547	Knob, Power <S>
13	29110083	Tape	71	27273164	Joint <PT/W/A/K>
16	28325539	Knob, Volume <B>	72	27141686A	Retainer <PT/W/A/K>
17	28325540	Knob, Volume <S>	74	838430107	3TRP+10S(BC), Self-tapping screw
17	28325405	Knob, Tone <B>	D961	22380070,	△ D5SB460,
17	28325474	Knob, Tone <S>	72	22380274	△ RBV602 or RS603M, Diode
18	28325500	Knob, Jog <B>	74	838430107	Wire tie
19	28184658	Knob, Jog <S>	D961	22380274	△ AC238, Isolation sheet
19	28184659	Top cover <B>	E801	260208	△ NRP-345, Plastic rivet <PT/W/A/K>
20	28184669	Top cover <S>	E812	22380705	△ 8A-UL, Primary fuse <PT/W/A/K>
20	838430088	3TTW+8B(BC),Self-tapping screw	E895	880009	△ 4A-SE-EAK, Primary fuse <PT/W/A/K>
21	28141235	3TTW+8B(Ni),Self-tapping screw <S>	F901	252198	△ 2.5A-SE-EAK, Fuse <P>
22	27175319A	Cushion	F902	252077	△ NSCT-2P1056,AC outlet <A>
22	27122362	Leg	F903	252075	△ NSCT-2P1357,AC outlet <A>
23	28141332	Cushion	F904	253192HIT	△ AS-CEE,Power supply cord <PT/W/A/K>
24	831430088	3TTW+8B(BC),Self-tapping screw	F916	252166	△ 6.3A-UL/T-237,Secondary fuse <D>
25	27122367	Rear panel <D>	F916	252079	△ 6.3A-SE-EAK,Secondary fuse <PT/W/A/K>
26	27122366	Rear panel <R>	JL701	2047402512	NCFCT-402512,Flat cable
26	27190470	KGLS-18S, Holder	P901	253193HIT	△ AS-CEE,Power supply cord <PT/W/A/K>
29	27300243	WS-2W, Clamp	P904	25051266	△ AS-CEE,Power supply cord <W>
30	87643010	WS 3*10F(BC), Washer	P905	253233KAW	△ AS-CEE,Power supply cord <W>
31	838230088	3TTB+8B(Ni), Nickel screw	P905	253197HIT	△ AS-SAA,Power supply cord <A>
33	27190813	KGPS-10RF, Holder	Q1516	2212654 or	△ AS-SAA,Power supply cord <K>
34	801433	3SM538W,SW+14B(BC), Special screw	Q5311	2212653	△ AS-SAA,Power supply cord <K>
35	27141681	Retainer	Q6255	2202922,	△ NSCT-2P1492-O,Transistor
36	28140680	Cushion	Q6255	2202923,	△ 2SC5196-R,
38	27141683	Retainer, Rear	Q6255	2202973,	△ 2SC4466-O,
39	27141684	Retainer, Front	Q6255	2202375 or	△ 2SC4466-P or
41	27160386	Heatsink	Q6255	2202374	△ 2SC4466-Y, Transistor
52	27211941	Front panel <D>	Q6277	Q6283	△ 2SA1939-R,
52	27211942	Front panel <P>	Q6277	Q6283	△ 2SA1939-Q,
53	28135244	Front panel <S>	Q6277	Q6283	△ 2SA1693-P or
53	28135245	Badge <B>	Q1513	2201653	△ 2SA1693-Y, Transistor
54	28198778	Facet	Q5255	Q526	△ 2SC3856-O,
59	27111017	Front bracket <DT/W/A/K>	Q5255	Q526	△ 2SC3856-P,
59	27111018	Front bracket <P>	Q5255	Q526	△ 2SC5242-Y,
59	27111019	Front bracket <S>	Q5255	Q526	△ 2SC5242-R or
59	27111019	Front bracket <S>	Q1514	2201663,	△ 2SA1492-O,

- 47 -

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
Q527 Q528	2201665, 2201664, 2202832 or 2202833	2SA1492-P, 2SA1492-Y, 2SA1492-R or △ NPT-1306D,Power transformer <D> △ NPT-1306P,Power transformer <PT/W/A> △ NPT-1306BD,Power transformer <W/K>	U14	IA745510-1A IA745510-1B	NAETC-6110-1A,Secondary circuit pc board ass'y <D> NAETC-6110-1B,Secondary circuit pc board ass'y <P>
T901	2301280	△ NPT-1306D,Power transformer <D> △ NPT-1306P,Power transformer <PT/W/A> △ NPT-1306BD,Power transformer <W/K>	U15	IA745510-1D IA745510-1C IA745510-1F IA745510-1E IA745510-1A IA745510-1B IA745510-1C IA745510-1D IA745510-1F IA745510-1G IA745510-1H IA745510-1I IA745510-1J IA745510-1K IA745510-1L IA745510-1M IA745510-1N IA745510-1O IA745510-1P IA745510-1Q IA745510-1R IA745510-1S IA745510-1T IA745510-1U IA745510-1V IA745510-1W IA745510-1X IA745510-1Y IA745510-1Z IA745510-1A IA745510-1B IA745510-1C IA745510-1D IA745510-1E IA745510-1F IA745510-1G IA745510-1H IA745510-1I IA745510-1J IA745510-1K IA745510-1L IA745510-1M IA745510-1N IA745510-1O IA745510-1P IA745510-1Q IA745510-1R IA745510-1S IA745510-1T IA745510-1U IA745510-1V IA745510-1W IA745510-1X IA745510-1Y IA745510-1Z IA745510-1A IA745510-1B IA745510-1C IA745510-1D IA745510-1E IA745510-1F IA745510-1G IA745510-1H IA745510-1I IA745510-1J IA745510-1K IA745510-1L IA745510-1M IA745510-1N IA745510-1O IA745510-1P IA745510-1Q IA745510-1R IA745510-1S IA745510-1T IA745510-1U IA745510-1V IA745510-1W IA745510-1X IA745510-1Y IA745510-1Z IA745510-1A IA745510-1B IA745510-1C IA745510-1D IA745510-1E IA745510-1F IA745510-1G IA745510-1H IA745510-1I IA745510-1J IA745510-1K IA745510-1L IA745510-1M IA745510-1N IA745510-1O IA745510-1P IA745510-1Q IA745510-1R IA745510-1S IA745510-1T IA745510-1U IA745510-1V IA745510-1W IA745510-1X IA745510-1Y IA745510-1Z IA745510-1A IA745510-1B IA745510-1C IA745510-1D IA745510-1E IA745510-1F IA745510-1G IA745510-1H IA745510-1I IA745510-1J IA745510-1K IA745510-1L IA745510-1M IA745510-1N IA745510-1O IA745510-1P IA745510-1Q IA745510-1R IA745510-1S IA745510-1T IA745510-1U IA745510-1V IA745510-1W IA745510-1X IA745510-1Y IA745510-1Z IA745510-1A IA745510-1B IA745510-1C IA745510-1D IA745510-1E IA745510-1F IA745510-1G IA745510-1H IA745510-1I IA745510-1J IA745510-1K IA745510-1L IA745510-1M IA745510-1N IA745510-1O IA745510-1P IA745510-1Q IA745510-1R IA745510-1S IA745510-1T IA745510-1U IA745510-1V IA745510-1W IA745510-1X IA745510-1Y IA745510-1Z IA745510-1A IA745510-1B IA745510-1C IA745510-1D IA745510-1E IA745510-1F IA745510-1G IA745510-1H IA745510-1I IA745510-1J IA745510-1K IA745510-1L IA745510-1M IA745510-1N IA745510-1O IA745510-1P IA745510-1Q IA745510-1R IA745510-1S IA745510-1T IA745510-1U IA745510-1V IA745510-1W IA745510-1X IA745510-1Y IA745510-1Z IA745510-1A IA745510-1B IA745510-1C IA745510-1D IA745510-1E IA745510-1F IA745510-1G IA745510-1H IA745510-1I IA745510-1J IA745510-1K IA745510-1L IA745510-1M IA745510-1N IA745510-1O IA745510-1P IA745510-1Q IA745510-1R IA745510-1S IA745510-1T IA745510-1U IA745510-1V IA745510-1W IA745510-1X IA745510-1Y IA745510-1Z IA745510-1A IA745510-1B IA745510-1C IA745510-1D IA745510-1E IA745510-1F IA745510-1G IA745510-1H IA745510-1I IA745510-1J IA745510-1K IA745510-1L IA745510-1M IA745510-1N IA745510-1O IA745510-1P IA745510-1Q IA745510-1R IA745510-1S IA745510-1T IA745510-1U IA745510-1V IA745510-1W IA745510-1X IA745510-1Y IA745510-1Z IA745510-1A IA745510-1B IA745510-1C IA745510-1D IA745510-1E IA745510-1F IA745510-1G IA745510-1H IA745510-1I IA745510-1J IA745510-1K IA745510-1L IA745510-1M IA745510-1N IA745510-1O IA745510-1P IA745510-1Q IA745510-1R IA745510-1S IA745510-1T IA745510-1U IA745510-1V IA745510-1W IA745510-1X IA745510-1Y IA745510-1Z IA745510-1A IA745510-1B IA745510-1C IA745510-1D IA745510-1E IA745510-1F IA745510-1G IA745510-1H IA745510-1I IA745510-1J IA745510-1K IA745510-1L IA745510-1M IA7	

**SCHEMATIC DIAGRAM****PRINTED CIRCUIT BOARD-PARTS LIST****VIDEO CIRCUIT PC BOARD(NAETC-6112-1A/1B/1C/1D/1E/1F)**

CIRCUIT NO.	PART NO.	DESCRIPTION
	<b>IC</b>	
Q251	22240373	BA7625
	<b>Transistors</b>	
Q252-Q254	2213354 or 2212125	2SA933S-R or 2SA1048-GR
Q255	2212286 or 2212285	2SC2878-B or 2SC2878-A
Q256	2213510 or 2214350	DTA114ES or RN2202
Q291	2213830	DTB113ZS
Q292	2213640	DTC123JS
	<b>Diodes</b>	
D251,D252	223205 or 223163	1SS270A or 1SS133
D291	224471203	MTZJ12C
	<b>Capacitors</b>	
C251,C252	354724719	470 $\mu$ F,6.3V,Elect.
C253,C255	354780229	2.2 $\mu$ F,50V,Elect.
C254	354724719	470 $\mu$ F,6.3V,Elect.
C256	354780229	2.2 $\mu$ F,50V,Elect.
C259	354721029	1000 $\mu$ F,6.3V,Elect.
	<b>Terminals</b>	
P251,P252	25045457 or 25045299	NPJ-3PDYE278 or NPJ-3PDYE158
	<b>Plug</b>	
JL242c	25055630	NPLG-9P592

**VIDEO CIRCUIT PC BOARD****BA7625(Video Selector Switch)**

#15	#11	#6	#1
A	B	E	MONITOR OUT
L	L	X	IN1
H	L	X	IN2
L	H	X	IN3
H	H	L	IN4
H	H	H	IN5

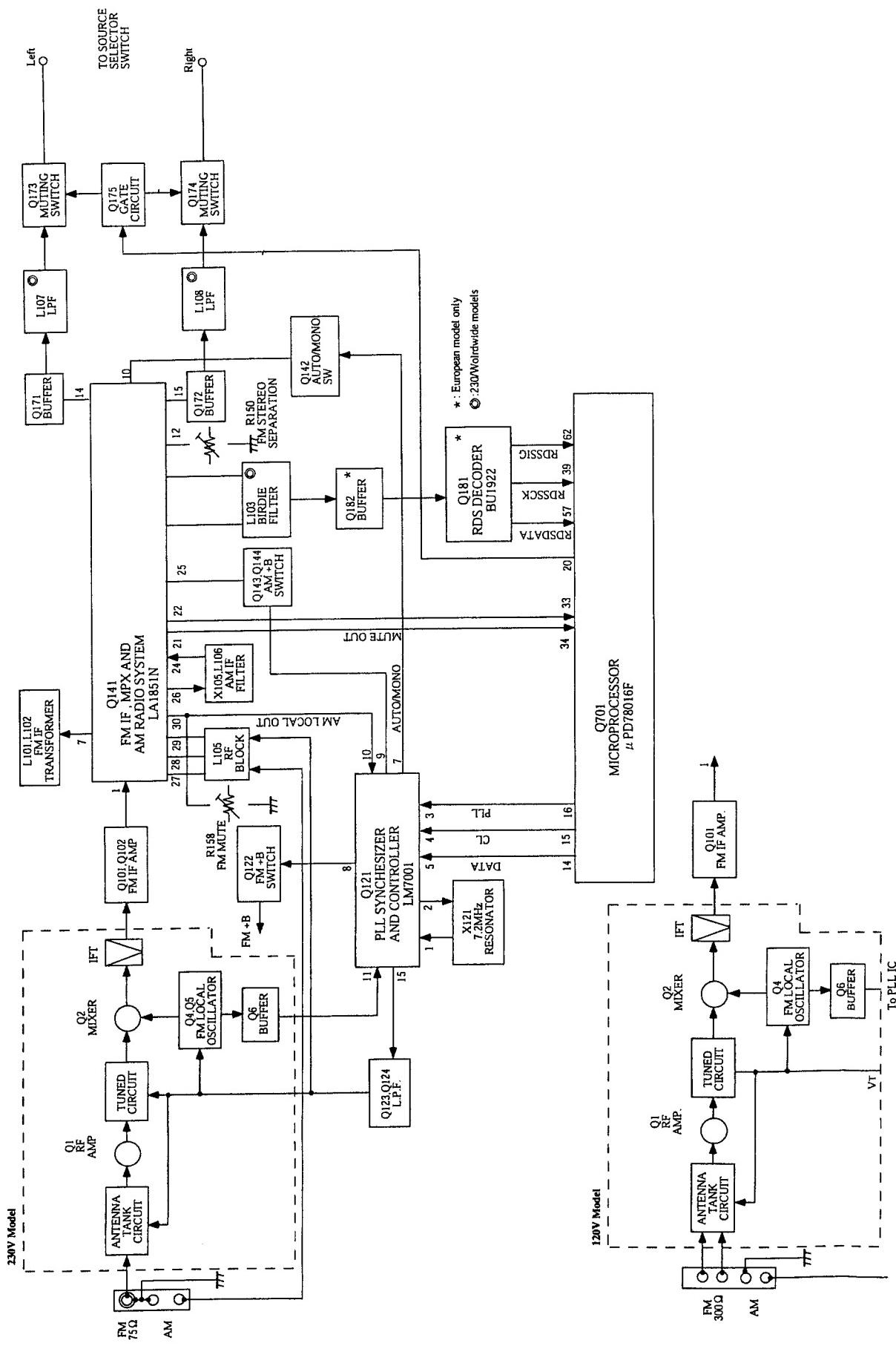
X:Don't care

#15	#11	#6	#10
A	B	E	VOUT2
L	L	X	IN1
H	L	X	IN3
L	H	X	IN4
H	H	L	IN4
H	H	H	IN5

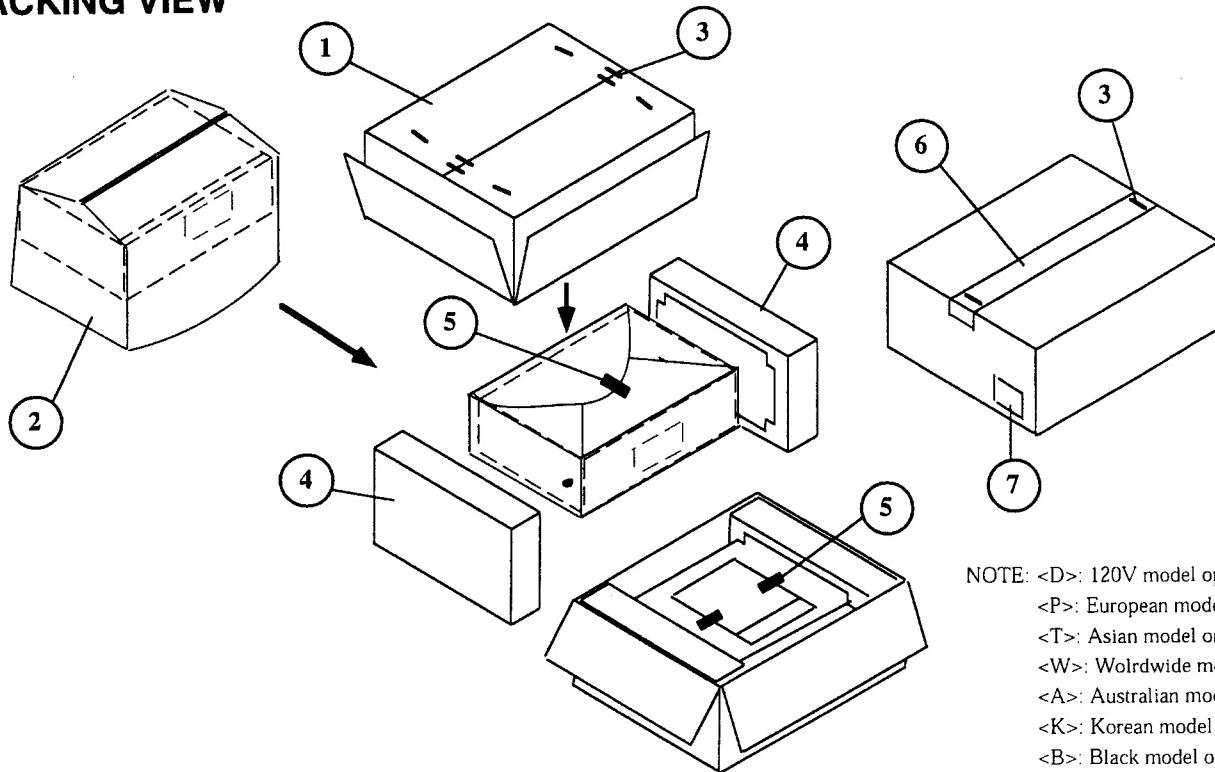
#15	#11	#6	#10
A	B	E	VOUT2
L	L	X	IN1
H	L	X	IN3
L	H	X	IN4
H	H	L	IN4
H	H	H	IN5

# BLOCK DIAGRAM

## TUNER SECTION



## PACKING VIEW



NOTE: <D>: 120V model only  
 <P>: European model only  
 <T>: Asian model only  
 <W>: Worldwide model only  
 <A>: Australian model only  
 <K>: Korean model only  
 <B>: Black model only  
 <S>: Silver model only

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
1	29053197	Carton <D>	8	Accessory bag ass'y	NMA-3057, Antenna coil
	29053198	Carton <P>		232140	RC-343M, Remote control <D>
	29053199	Carton <T/W/A/K>		24140343	RC-344S, Remote control <P/T/W/A/K>
	29053200	Carton <S>		24140344	CV-K-1, Conversion plug <W>
2	29100034-1A	850*650.Poly bag		25055018	YAE21-0237, FM antenna adaptor
3	282301	Staple		25065462	<P/T/W/A/K>
4	29091796A	Pad		29100097-1A	350*250.Poly bag
5	261504	Adhesive tape		292111	FM antenna <D>
6	29110071	PP tape		292112	FM antenna <P/T/W/A/K>
7	29362208	UPC label <D>		29342471A	Instruction manual E
	29362209	EAN label <P/T/W/A/K>		29342472	Instruction manual FSI <P>
	29362210	EAN label <S>		29342473	Instruction manual GSwd <P>
				29342474A	Instruction manual T <T/W>
				29358002K	Service Station list <D>
				29365019B	Warranty card <D>
				3010194	UM-3, Battery

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